San Bernardino County Long Range Transit Plan

Final Report

PARSONS

In Association with

Hexagon Transportation Consultants, Inc.

Patti Post & Associates

M.I.G.

Applied Management & Planning Group

Governments SANBAG Working Together

San Bernardino Associated Governments

April 2010

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Submitted to:

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Executive Summary

Introduction

Southern California is one of the largest and most complex metropolitan areas in the nation, and its transportation challenges are equally large and complex. The County of San Bernardino, has the largest land area of any county in the contiguous 48 states, and has grown by more than 40% since 1990 reaching more than 2 million residents. According to the San Bernardino Associated Governments (SANBAG), the population of the county is expected to continue growing for the next 30 years and is expected to reach 3 million residents by the year 2035. This increase in population, coupled with increases in employment and the creation of new job centers, will dramatically affect the County's transportation systems. In response to these changes, local transit systems will need to expand and enhance their transit services to provide essential mobility for transit dependent populations and to relieve traffic congestion.

Population growth has pushed urbanized areas outward into the Victor Valley and the Morongo Basin. As urban expansion occurs further into the county, the sheer size of the county and low density development heavily restricts the role of transit in providing mobility to many of its citizens. As the population of the county ages and minority populations continue to grow, shifting demographics will continue to influence travel behavior and transit's ability to serve regional needs.

The Long Range Transit Plan (LRTP) addresses the county's current and future travel challenges and provides a system of transit facilities and services that can increase transit's role in the future. Given the large and diverse nature of the county, the plan is split geographically into three areas: San Bernardino Valley; Victor Valley; and rural areas.

The San Bernardino Valley comprises 15 cities, plus unincorporated areas, in the southwest corner of San Bernardino County. While the land in the San Bernardino Valley covers less than 2.5 percent of the county, it houses more than 70 percent of the county's population, and these residents account for more than 90 percent of the current transit ridership in the county.

By the planning horizon year 2035, the San Bernardino Valley is expected to continue its explosive growth, with 36% more population, 42% more households, 77% more jobs, and 53% more travel trips, according to San Bernardino Associated Governments (SANBAG) estimates. Given this growth, mass transit must play a larger role in serving future travel demand to reduce the burden on the County's freeways and roads and guide responsible growth.

As travel demand grows on the existing road network and traffic congestion increases, transit services provided by local bus routes suffer a decrease in reliability and an increase in travel times. Premium transit service can offer a solution. The benefits of premium transit service can include increased reliability, competitive travel times when compared to the automobile and increased mobility and accessibility. Premium transit—such as rapid buses and rail modes—can also encourage more balanced, "transit-oriented" land use development near transit stations. Mass transit is a "green solution" because it attracts car drivers to switch to transit, thereby lessening air pollutants and energy consumption.

Transit Providers

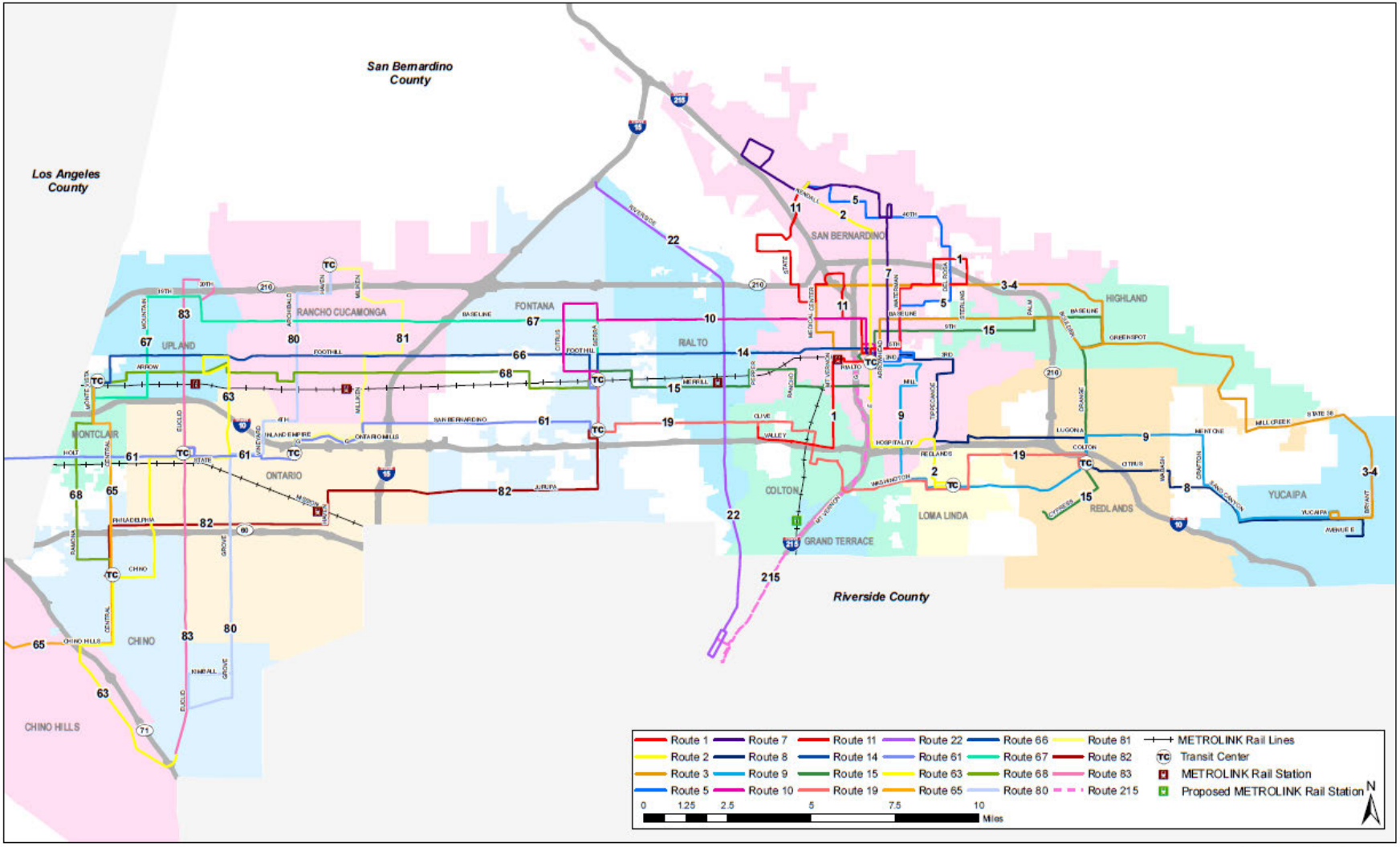
Currently, there are six local transit service providers and one regional rail network operating in San Bernardino County. The transit routes that these service providers operate cover less than ten percent of the land area of the county, but they provide transit services to more than 90 percent of the population of the county.

- SCRRA - The Southern California Regional Rail Authority (SCRRA) is the joint powers authority that operates the Metrolink commuter rail system. This system serves parts of Los Angeles, Orange, Riverside and Ventura Counties, along with the San Bernardino Valley portion of San Bernardino County.
- Omnitrans - Omnitrans was established as a regional transit authority in 1976 through a Joint Powers Authority (JPA) that serves a 456 square mile service area in the San Bernardino Valley with a population close to 1.4 million.
- Victor Valley Transit Authority - Victor Valley Transit Authority (VVTA) is a Joint Powers Authority (JPA) established in 1991 and comprised of five jurisdictions; the cities of Adelanto, Hesperia, and Victorville, the town of Apple Valley, and several unincorporated areas of San Bernardino County including Phelan, Pinon Hills, Wrightwood, Lucerne Valley, Helendale, and Oro Grande. The combined population of the Victor Valley recently passed 250,000.
- Morongo Basin Transit Authority - Morongo Basin Transit Authority (MBTA) is a JPA that operates in the city of Twentynine Palms, the town of Yucca Valley and in the Morongo Basin.
- Mountain Area Regional Transit - The Mountain Area Regional Transit Authority (MARTA) is a JPA that provides coordinated transit services for all of the mountain communities including, Big Bear Valley, Running Springs, Crestline, Lake Arrowhead and Blue Jay. The agency also provides two "Off the Mountain" services, from Big Bear Valley and Lake Arrowhead to downtown San Bernardino.
- Barstow Area Transit - Barstow Area Transit (BAT) provides transit service to the Barstow area, as well as the communities of Hinkley, Lenwood, Grandview, Yermo, Harvard, Daggett and Newberry Springs.
- Needles Area Transit - The City of Needles administers the Needles Area Transit (NAT) service in the Needles Area.

Development of Alternatives

The recommended LRTP began by developing and analyzing a wide range of alternatives designed to meet the needs of the county. Alternatives were developed based on the identification of major travel markets and their ability to generate potential ridership. Coordination with transit agencies, local governments and with extensive public outreach led to the development of four alternative scenarios for the planning horizon of 2035. They are summarized as follows:

- The Baseline Alternative – shown in Figure ES-1, continues all transit services currently existing and any improvements currently funded.
- The Plan Alternative – shown in Figure ES-2, is an enhancement of the baseline alternative that includes restructuring the existing system of local bus routes plus all projects currently planned for development.



Baseline Transit Alternative

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure ES-1: Baseline Transit Alternative

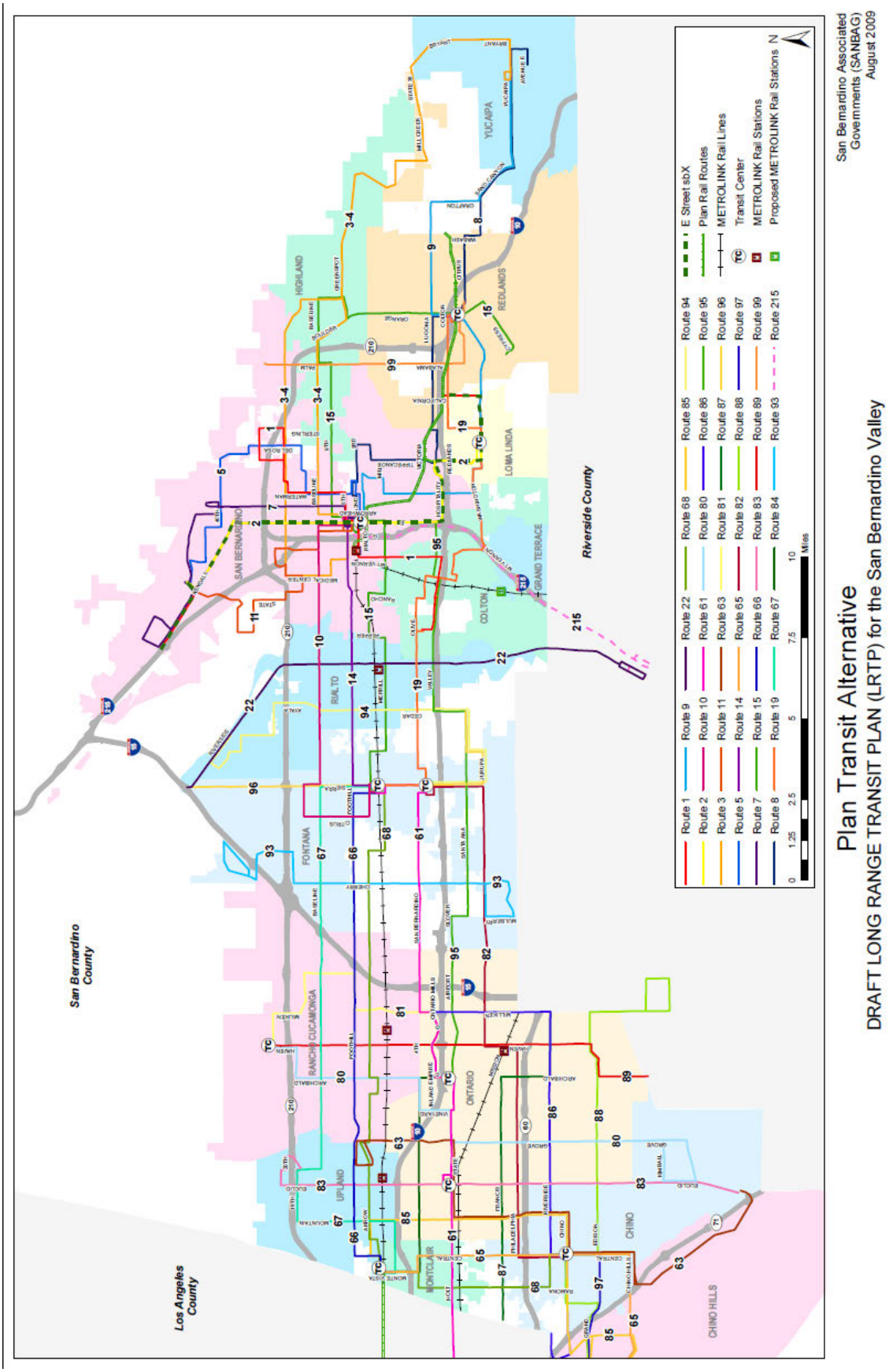


Figure ES-2: Plan Transit Alternative

Source: Parsons, 2009.

- The Vision Alternative - shown in Figure ES-3, is a premium transit scenario that includes additional BRT and Rail service as well as other potential transit service improvements.
- The Sustainable Land Use Alternative - shown in Figure ES-4, is the Vision scenario with modified land use forecasts that support higher transit usage.

These four alternatives, described in detail in Chapter 5, were evaluated in Chapter 6 to meet the County's future transit challenges and needs. The evaluation is based on the alternatives' ability to serve key travel markets, total ridership, cost effectiveness, public input and the ability to provide economic development. The alternatives evaluation included consideration of the most appropriate technologies to serve the expected ridership demand in each corridor, and to match transit supply or capacity with transit demand. Rough order of magnitude capital and operating and maintenance costs were also developed and analyzed to determine the appropriate level of funding support required.

Three alternatives were also prepared for the Victor Valley including the Base Alternative, the Plan Alternative, and the Vision Alternative. These alternatives are described in detail and evaluated in Chapter 7.

Public Outreach

Extensive public outreach occurred as part of the LRTP process. The first public meetings were a series of workshops held in July and August of 2006 in various locations in the San Bernardino Valley. The alternatives presented included the Baseline and Plan Alternatives and three vision alternatives that became condensed into one Vision Alternative, based on public opinion.

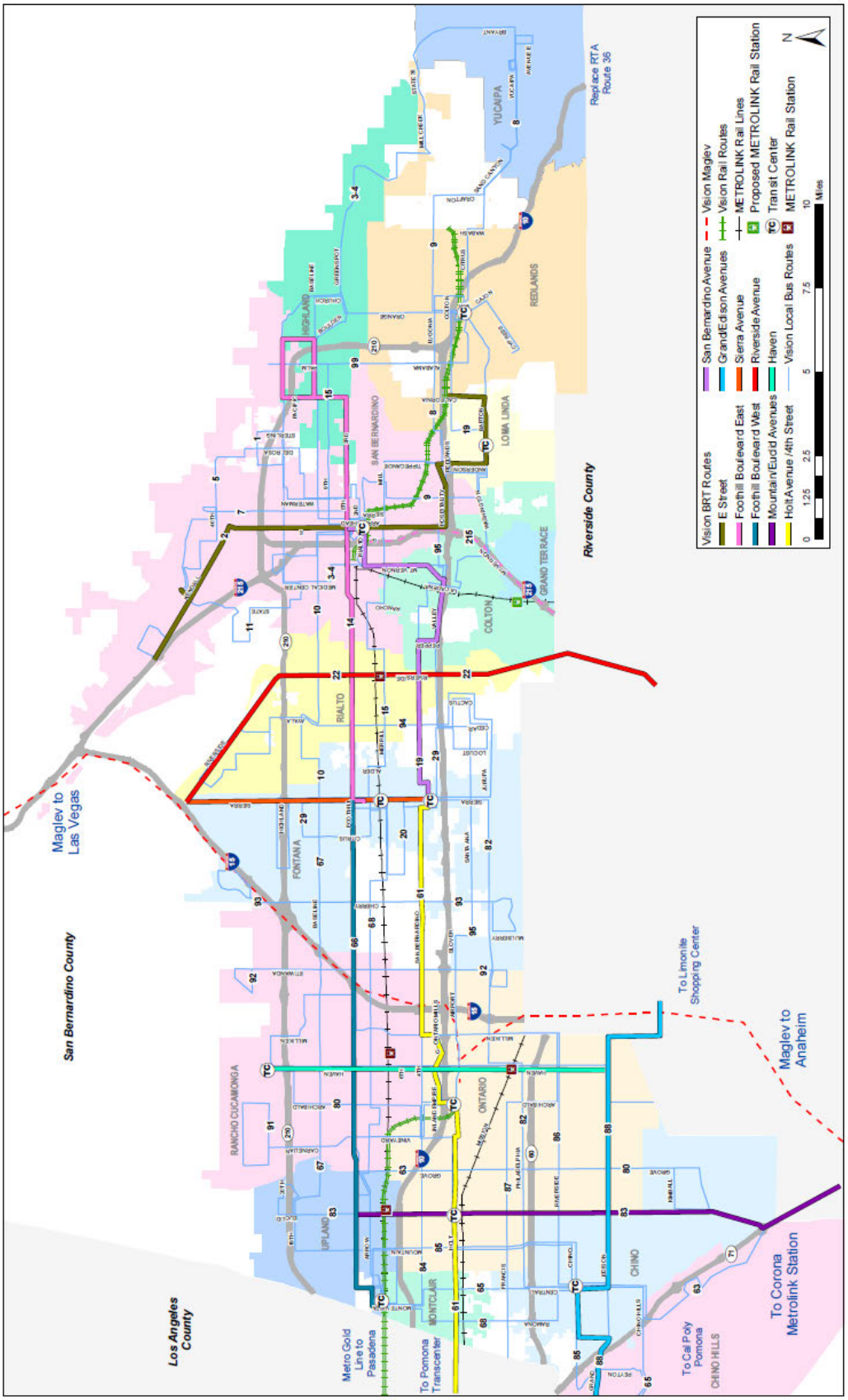
In May of 2009, SANBAG hosted a series of meetings to assist in the development of the Sustainable Land Use Alternative. Those in attendance included representatives of local jurisdictions that had premium transit service identified in the Vision Alternative. Additional public outreach meetings occurred in August of 2009 to receive public input on the selection of the preferred alternative and to receive input on the recommended LRTP. Chapter 9 provides a summary of all the public meetings.

Funding Projections

Funding projections were prepared for the LRTP and included a variety of Local and Federal Sources. Projections for Measure I, the local half-cent sales tax, was provided by SANBAG. Local transportation funds were projected by subareas for the entire county. Federal funding projections were prepared for the Section 5317 New Freedom Program, Section 5316 Job Access & Reverse Commute (JARC) Program, Section 5311 Rural Program, Section 5307 Urbanized Area Formula Program and Section 5309 Rail Modification Program. Funding Projections were not prepared for State Transit Assistance (STA) funds, as that funding source was suspended by the state. Surface Transportation Program (STP), and Congestion Management and Air Quality (CMAQ) Funding, were not included in the projections due to the nature of the funding source, and Federal 5309 New Starts/Small Starts funds were not included in the projections as they are competitive funds and are distributed on a project-by-project basis, but were included in the recommended LRTP.

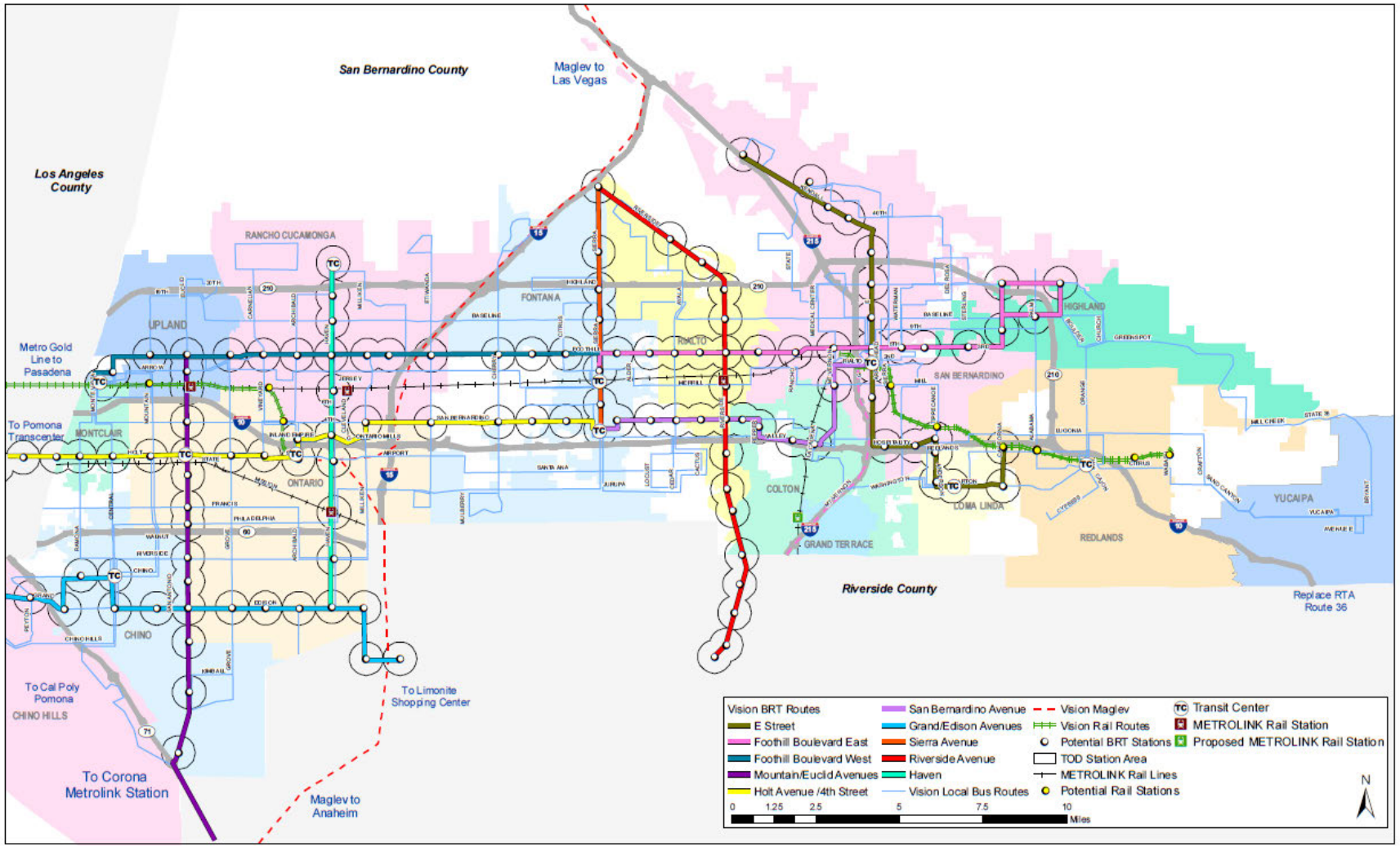
Recommended LRTP

For the San Bernardino Valley, the Sustainable Land Use Alternative provides the most annual boardings and serves the



Source: Parsons, 2009.

Figure ES-3: Vision Transit Alternative



VISION Sustainable Land Use Scenario

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure ES-4: Sustainable Land Use Transit Alternative

highest annual passenger miles. Additionally, this alternative provides the opportunity to guide development in line with the implementation of SB 375 and provides the communities of the San Bernardino Valley a vehicle to promote economic development.

SANBAG's recommended LRTP is a portion of the Sustainable Land Use Alternative, and encourages partnering cities to adopt policies to support transit as recommended in Chapter 3. It is anticipated that future transit improvements will be developed only when the transportation and land use connection is appropriately addressed, resulting in higher land use densities that will generate higher transit ridership to justify the improvements. The recommended LRTP includes the Metrolink Extension to downtown San Bernardino, the Redlands Rail Commuter Rail project, the Goldline Extension to Montclair Transit Plaza, increased service levels for Metrolink and Omnitrans, and four sbX Bus Rapid Transit (BRT) corridors.

A funding deficit is shown in Table ES-1over the life of the plan that reaches 1.1 billion dollars. The Operating Costs reflected in this analysis include the total operational cost of the Sustainable Land Use. Operational costs of each capital improvement were not included in this study. This deficit does not include potentially available funding including STA funds, STP and CMAQ funds as well as a potential increase in Measure I funds. Chapter 10 identifies various other financial strategies that may be considered for implementation to help offset the projected deficit.

Table ES-1: Recommended LRTP for San Bernardino Valley

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 2010-2035
Omnitrans Fleet* (exclude NS)	$51,060,000	$143,670,000	$174,500,000	$369,230,000
BRT Corridor New Starts**	$170,650,000	$214,500,000	$346,200,000	$772,050,000
Omnitrans Other Costs	$66,600,000.00	$176,800,000	$251,600,000	$495,000,000
Redlands Rail	-	$240,000,000	-	$240,000,000
Metro Goldline to Montclair		$50,000,000		$50,000,000
Metrolink Extension		$40,000,000	-	$40,000,000
Metrolink Strategic	$120,000,000	$110,000,000	-	$230,000,000
Total Capital Costs	$408,310,000	$974,970,000	$813,000,000	$2,196,280,000
Total Net Operating Costs***	$399,123,820	$914,317,700	$1,313,942,860	$2,627,384,380
Projected Revenue	537,091,618	1,175,171,895	$ 1,515,443,758	$ 3,361,560,638
Projected 5309 Funding of Recommended Corridors****	$75,000,000	$150,000,000	$150,000,000	$375,000,000
Total	$(195,342,202)	$(564,115,805)	$(461,499,102)	$(1,087,103,742)

*Includes ADA Fleet.
**E Street without Extension.
***Operating Cost for Vision Alternative.
****Redlands Rail and four sbX Corridors.
Source: Hexagon, Parsons, 2009.

For the Victor Valley, the three alternatives were evaluated based on a cost-effectiveness measure, by calculating the ratio of annual boardings over the annual cost of the system. The Vision Alternative, as the highest ranked alternative, is the Recommended LRTP for the Victor Valley. As shown in Chapter 11, all three alternatives are well within the funding projections and no shortfall in funding is expected for these alternatives. It is anticipated that only a percentage of the Local Transportation Funds (LTF) will be utilized by the transit network for the area, providing funding for other transportation and transit usage in the Victor Valley.

Victor Valley is a key growth area in the county and it is unclear what effect the implementation of SB 375 legislation will have on the development patterns of the valley. Transit's role in providing a choice in mobility to residents of the valley is expected to remain a challenge, and due to the low density nature of the Victor Valley, new services will be implemented primarily as they become feasible in the short range planning process.

The Rural Transit Agencies of San Bernardino County each operate in unique circumstances from the remainder of San Bernardino County. The LRTP analyzed a continuation of the existing level of service throughout the life of the plan, and although funding shortfalls will exist in the near term, there are sufficient funding sources identified over the life of the plan to support these services.

In summary, this recommended LRTP for San Bernardino County offers the best transit improvements to address growing travel demand anticipated through 2035. The LRTP is a dynamic plan and process that will be periodically updated to adapt to changes in policies, funding, land uses and transit demands.

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CHAPTER 1 INTRODUCTION

1.1 COUNTY SETTING

San Bernardino County, located in Southern California boasts a wide variety of natural settings including beautiful mountains and vast deserts as well as numerous prominent institutions, local and regional parks, cultural centers and historic landmarks.

Framed by the Counties of Los Angeles and Orange on the west, Riverside County to the south and extending to Nevada and Arizona to the east, as shown in Figure 1-1, the County is connected to Los Angeles, San Diego and Orange County by several major transportation corridors. Interstate 10 (San Bernardino Freeway) is the major east-west freeway through the highest density population centers of the San Bernardino valley, while Interstates 15 and 215 connect the valley from Riverside and San Diego to the South, and continue over the Cajon Pass to the Victor Valley and the cities of the high desert and eventually to Las Vegas. Scenic State Highway 18 enters the mountains surrounding the San Bernardino Valley and attracts tourists and residents during the weekends and holiday seasons to Lake Arrowhead, Big Bear Lake and other mountain communities and ski resorts on the famous Rim of the World Highway.

The eastern portion of the county is mostly undeveloped and contains the Mojave National Preserve, the Fort Irwin and Twentynine Palms military installations, as well as portions of Death Valley and Joshua Tree National Parks. Twentynine Palms Highway connects the City of Twentynine Palms, Town of Yucca Valley and Morongo Valley to Palm Springs in Riverside County, the nearest major metropolitan area.

SAN BERNARDINO VALLEY

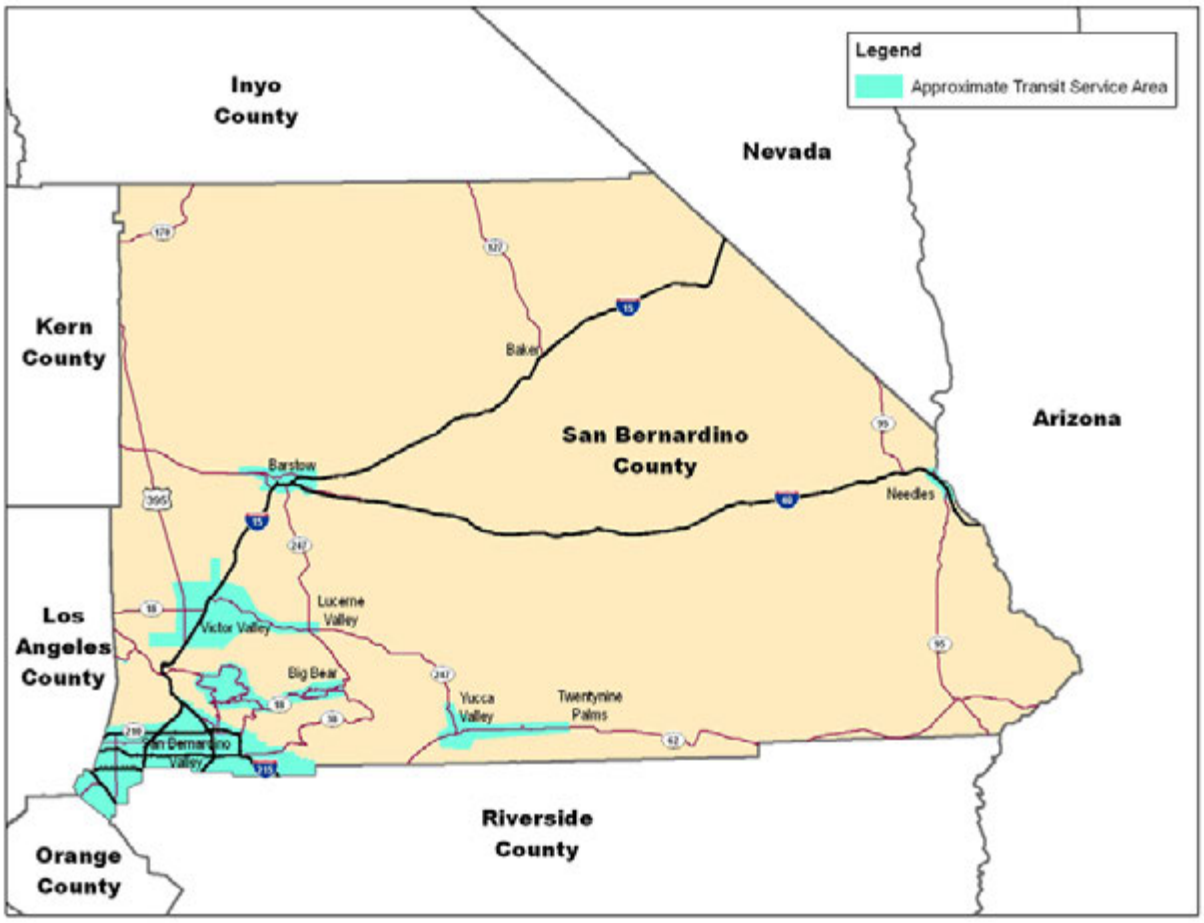
San Bernardino Valley is the most intensely developed portion of the county. Located in the southwest corner of the county, it is bounded by the San Gabriel and San Bernardino Mountains to the north and east, and the counties of Los Angeles, Orange and Riverside to the west and south.

The County is connected to other regional centers by scheduled transit and commuter rail service provided by Metrolink and (to a much lesser degree) by the Southwest Chief and Sunset Limited Services provided by Amtrak. Metrolink serves as an increasingly important commuter rail service between San Bernardino and Los Angeles, with connecting service south to Riverside and Orange County. Ontario International Airport (ONT) is located in the west valley and is the largest airport in the region with several major expansion projects recently completed. Omnitrans provides local and express bus service within the San Bernardino Valley, and five other operators serve outlying communities.

VICTOR VALLEY

The Victor Valley area is located on the western edge of the Mojave Desert just north of the San Bernardino Mountains, roughly 45 miles north of the City of San Bernardino and 80 miles northeast of downtown Los Angeles. Major municipalities in the Victor Valley area include Victorville, Hesperia, Adelanto and Apple Valley. Known as the “high desert”, the area has an elevation of about 3,000 feet above sea level.

The valley was historically known for its agricultural, industrial, and military land uses. During the last several decades, however,



Source: ESRI, Parsons, 2009

Figure 1-1: San Bernardino County and Surrounding Areas

Victor Valley has become an area of increasing development in the Southern California Basin with a population exceeding 200,000. As the area's residential population continues to grow dramatically and as the local economy develops and diversifies, it is vital that transit continues to provide a viable mobility option for residents.

The primary highway in the Victor Valley area is Interstate 15 (I-15), which bisects the area in a north-south direction, entering the Valley between the San Gabriel and San Bernardino Mountains, which divide the Victor Valley area from the Los Angeles and Riverside metropolitan areas to the southeast, and continuing north to Barstow, roughly forty miles to the northeast, and then to Las Vegas, Nevada. State Highways 18 and 395 provide additional highway access to Victor Valley, and Historic U.S. Route 66 passes through Old Town Victorville. The Victorville Amtrak station is also located in Old Town Victorville; the "Southwest Chief" Amtrak rail line stops at the Victorville station once daily in each direction.

1.2 Challenges

Growth and Development

As a major emerging employment center, employment in the county is forecasted to grow by almost 80% by 2030. The growth in employment will bring the county closer to

jobs-housing balance and will have a dramatic affect to travel behavior. San Bernardino County's freeways are already highly congested during commute hours and a substantial increase in overall traffic will affect the ability of transit to provide essential mobility and maintain good basic coverage in communities.

The cities of the High Desert have experienced rapid growth and the area now totals over 200,000 people. As the residential growth continues in the area, new economies are emerging, such as the Southern California Logistics Airport (SCLA) a major employment center.

This rapid residential growth has occurred primarily in low densities that strain local infrastructure and results in additional Vehicle Miles Traveled (VMT) as commutes to traditional employment areas become longer. The conversion of vacant land to urban and suburban environments at such a rapid rate challenges local and regional planners to guide development in a beneficial and meaningful way.

Social Challenges

Given the low population density of much of the county, transit's ability to offer mobility to the transit dependent and provide accessibility to key medical and social services will continue to be a major area of focus. SANBAG, in December of 2007, developed the *Public Transit-Human Services Transportation Coordination Plan* for San Bernardino County. This short-term plan identifies mobility needs for five remote areas of the County and recommended strategies and priorities to help improve access to human necessities such as, medical appointments, trips to the pharmacy, social service agency visits, and grocery store shopping for the elderly, disabled and low-income individuals. As the transit dependent populations grow throughout the county, the long-term ability to provide access to these services will play a larger role for transit providers.

Environmental Concerns and Benefits

Good air quality is vital for the health of residents, nature and the economy. Southern California continues to have among the worst air quality in the nation, and although significant improvements have been made, the South Coast Air Basin that includes San Bernardino Valley and mountain communities, still has the highest concentrations of ozone and PM2.5 in the nation.

Since 1980, the region has accomplished significant improvements in its air quality particularly with respect to carbon monoxide (CO) and ozone. For example, the South Coast Air Basin is now a CO attainment area and in the entire Inland Empire (compromising San Bernardino and Riverside Counties), emission levels have been reduced by almost half during the last decade.

According to the 2008 SCAG Regional Transportation Plan (RTP), of all the people nationwide who are exposed to PM2.5 (particulate matter with a diameter of 2.5 micrometers or smaller) levels that exceed the national health-based standard, 52% live in Southern California. Vehicle emissions are a major source of pollution as fossil fuels continue to be the main energy source for vehicles.

In addition to the challenges presented by air quality, transportation represents 38% of greenhouse gas (GHG) emissions. Climate change of which overwhelming evidence shows is occurring, poses serious risks to our economy, water supply, biodiversity and public health, and has led new efforts to

reduce the amount of GHG emissions released into the atmosphere.

Funding Challenges

Transit operators face a continual challenge to grow, operate and maintain transit services. Federal, State and Local funding play a crucial role in determining what transit services can be provided.

Costs of operating transit service are expected to rise at least as fast as inflation. In the short term, funding for transit, particularly state and local funding, may not keep pace with inflation. The recession and budget concerns have led to a cutback in state funding for transit. Although a recent court decision favored the transit operators, it is unlikely to change the state funding picture anytime soon. At the local level, transit funds keyed to taxable sales have fallen during the recession, causing additional difficulties for transit operators.

The long term forecast has the economy rebounding and sales tax and other funding increasing over time. However, the small operators will be challenged to maintain their services through the life of this plan and may find it difficult to obtain the resources to expand. The larger transit operators in the county can call on a wider range of funding sources. Some of these are tied to population and will grow as the population expands.

1.3 Legislative Framework

Mass Transit and Transit Oriented Developments are consistent with the strategies, policies and plans of many local, regional, state and national governmental agencies and national development organizations. Among these are the Federal Transit Administration (FTA), Southern California Association of Governments, the State of California, and the Urban Land Institute (ULI).

In 1994, the FTA established the Livable Communities Initiative, which aimed to strengthen the integration of transit and community planning and encourage land use policies that support the use of transit.

In 2005 the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) was signed. SAFETEA-LU went further than the Livable Communities Initiative, granting priority for funding in its New Starts and Small Starts programs for transit projects with transit-supportive land use policies and implementation measures.

In 2002, with the passage of Assembly Bill (AB) 1493, California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the

recommendations made by the state's Climate Action Team.

Senate Bill 375 signed by the Governor in September of 2008, a housing, land use and air quality bill helps implement AB 32's GHG reduction goals by integrating land use, regional transportation and housing planning. SB 375 requires regional transportation plans to meet the GHG reductions targets set in AB 32 by adopting a "sustainable community strategy" (SCS) or a development strategy that promotes the reduction of Vehicle Miles Traveled (VMT) from passenger vehicles. Transportation projects that are part of the SCS will have priority on State transportation money. Although the law focuses on regional planning efforts, it specifically states that it does not supersede city or county land use powers and local plans are not required to be consistent with the approved SCS. The SCS also allows transit priority projects and projects consistent with the SCS to be exempt or receive streamlined California Environmental Quality Act (CEQA) clearance.

Two types of projects are eligible for CEQA incentives if they are consistent with the SCS: Transit Priority Projects, and residential or mixed use residential projects. Transit Priority Projects are defined as having at least 50% residential use, a density of at least 20 units per net acre and located within a half mile of a regional transit corridor. Residential or mixed use residential projects must have at least 75 percent of the total square footage for residential use.

Transit Priority Projects qualify for a CEQA exemption if they: (1) are consistent with the SCS; (2) meet eight environmental criteria, including no wetlands/riparian areas, historic resources, hazards or endangered species located on the site; and (3) meet seven land use criteria, including affordable housing or open space requirements. Transit Priority projects that do not meet the exemption requirements may still qualify for a streamlined environmental review under CEQA if certain criteria are met. The form of streamlined review includes a limited Initial Study or Environmental Impact Review (EIR).

Residential or mixed use residential projects do not need to analyze the following impacts in their CEQA documents: growth-inducing impacts; project or cumulative impacts from vehicle trips on global warming or the regional transportation network; or a reduced residential density alternative.

1.4 Planning Framework

The LRTP was developed in conjunction with the comprehensive regional planning process that includes the following Planning Efforts:

Regional Transportation Plan (RTP)

The Regional Transportation Plan (RTP) is a 20-year transportation blueprint adopted by SCAG that outlines a long-range strategy to meet mobility, financial, and air quality requirements. This plan shows how the region will meet federal air quality standards and other needs based on realistic estimates of transportation funding. Only programs and projects outlined in the final document are eligible for state and federal funding. The RTP establishes transportation priorities and identifies projects that support its goals.

The RTP is updated every three years. For the last update, in May 2008, SANBAG staff and all 24 cities in San Bernardino County provided extensive input to this regional plan and submitted future county transportation projects for inclusion. The RTP reflects population, housing, employment, environmental, land use forecasts, and technology changes for the Southern California region.

Public transit priorities included in the public transportation system in the RTP include:

- BRT: Designed to provide fast, high-quality bus service to attract choice riders and effect a mode shift to reduce congestion.
- Metrolink Commuter Rail: Provides the backbone of a mass transit regional commute service.
- Land Use – Transit Coordination: The regional transit program calls for increased and better coordination between transit and land use planning.
- Transit-Oriented Development (TOD): Local and regional planning agencies are encouraged to promote TOD initiatives cooperatively along major transit corridors.
- Transit Centers: Develop a network of transit-based centers and corridors, supported by in-fill development that maximizes use of existing infrastructure, supports increased ridership, reduces air pollution, and preserves green space and undeveloped areas.

The LRTP is a strategy that reflects the goals and public transit priorities of the RTP.

Compass Blueprint 2% Strategy

As stated earlier, the region is expected to experience explosive growth. In 2001, SCAG began an ambitious study to examine how the region should grow. In 2004, the results indicated that if growth were concentrated in only 2% of the land area of Southern California, the region could accommodate the growth while still maintaining the single family neighborhoods that make up Southern California cities. But in that 2% area, largely in built up areas and along existing and proposed transit corridors, densities would have to increase and efforts would have to be made to integrate land uses so as to improve the jobs-housing balance.

Since 2004, SCAG has been undertaking a series of studies, entitled *The Compass Blueprint 2% Strategy*, which is a guide for how and where to implement SCAG's Growth Vision for Southern California. While recognizing valuable quality of life goals, the Compass Strategy provides a guide to local decision-makers, demonstrating how minor changes in land use and transportation decision-making can reap unexpected economic, mobility, and environmental benefits locally, sub-regionally and regionally.

The Strategy proposes increasing the region's mobility by encouraging transportation development and transit-oriented development focusing on in-fill development and redevelopment opportunities.

In 2006, as part of SCAG's *Compass Blueprint 2% Strategy*, SANBAG began to examine in more detail how anticipated growth in San Bernardino County could be accommodated as part of the *SANBAG Transportation Land Use Integration Project*. Released in March of 2008, the Transportation Land Use Integration Project, building on the initial SCAG efforts, identified "opportunity" areas in the San Bernardino Valley where growth would likely occur and transit ridership could support TOD's, as shown in Figure 1-2. These opportunity areas include city centers, transit hubs or Transcenters, and other high-density growth areas. The Project identified seven opportunity sites and generated preliminary recommendations to guide development, consistent with the key goals of the Compass Blueprint 2% Strategy.

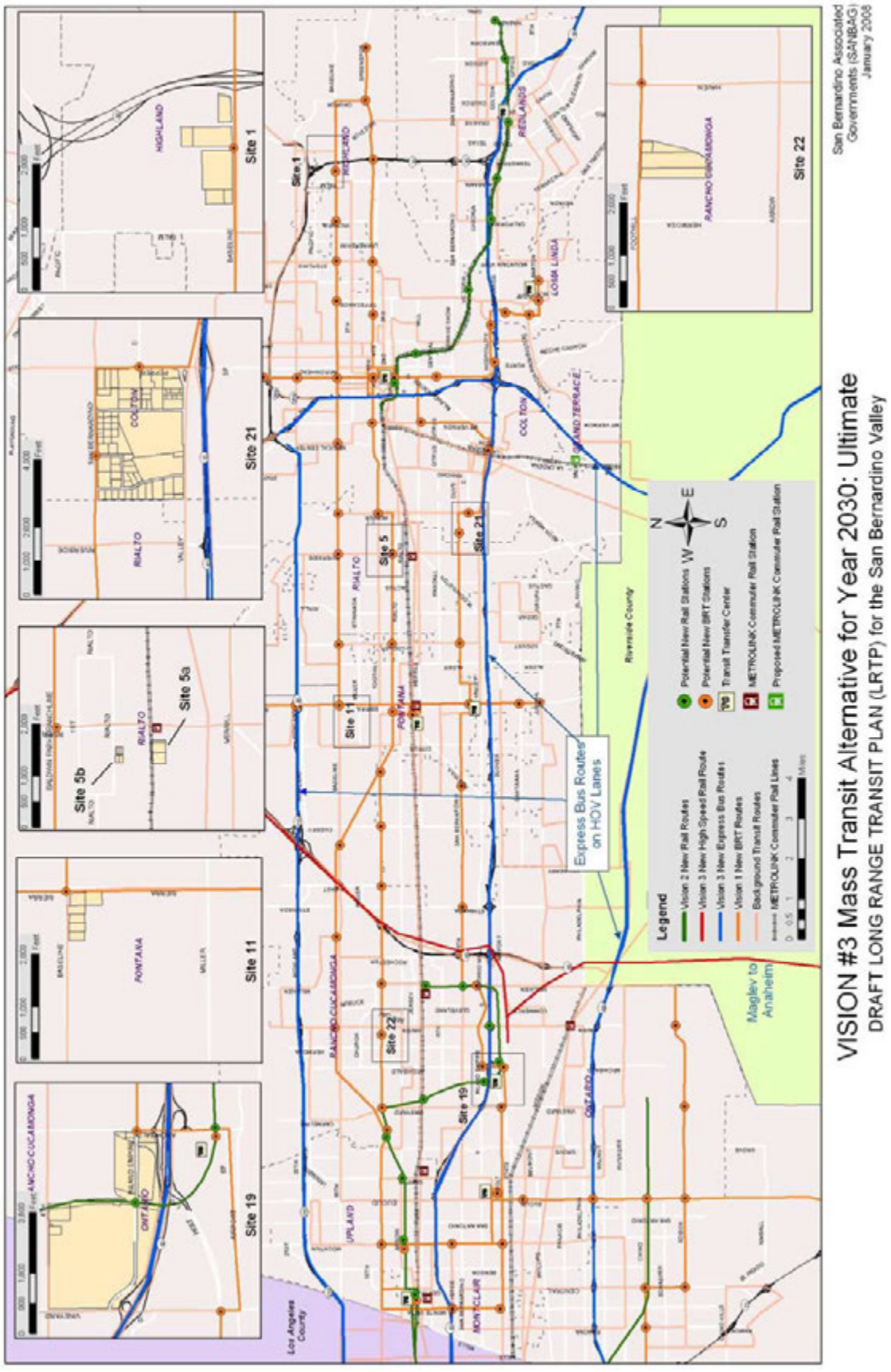


Figure 1-2: Compass Blueprint Sites

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CHAPTER 2 EXISTING CONDITIONS

2.1 EXISTING TRANSIT CONDITIONS

SAN BERNARDINO VALLEY

SCRRA

The Southern California Regional Rail Authority (SCRRA) is the joint powers authority that operates the Metrolink commuter rail system and is comprised of the following public agencies: Los Angeles County Transportation Commission, Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments, and the Ventura County Transportation Commission. Metrolink has the highest ridership of any commuter rail operation in California and is the fifth largest in the United States. It is also one of the youngest, having started operations in October 1992. Metrolink operates seven routes in the southern California region and operates three routes in the San Bernardino Valley. The San Bernardino Line paralleling the I-10 freeway contains the highest ridership in the Metrolink system and serves six stations in the valley. The Riverside line paralleling State Route 60 serves one station in the valley. The Inland Empire-Orange County Line originates in San Bernardino and parallels the 91 freeway.

Omnitrans

Omnitrans was established as a regional transit authority in 1976 through a Joint Powers Authority (JPA) that included the cities of Chino, Colton, Fontana, Loma Linda, Montclair, Ontario, Redlands, Rialto, San Bernardino, Upland and the County of San Bernardino. The cities of Chino Hills, Grand Terrace, Highland, Rancho Cucamonga, and Yucaipa have since joined the JPA. The County and all member cities are represented on the Omnitrans Board of Directors.

Omnitrans serves a 456 square mile service area in the San Bernardino Valley with a population close to 1.4 million. The range of Omnitrans services includes:

29 fixed bus routes, including 17 routes in the East Valley (east of I-15), 11 routes in the West Valley (west of I-15), and one regional express route to the City of Riverside. These Routes are shown in Figure 2-1.

- Two OmniLink general public demand-response services in Chino Hills and Yucaipa designed for low-density service areas.
- An ADA complementary paratransit service, Access, operated throughout the Omnitrans service area.
- OmniLink, a dial-a-ride service designed for low-density service areas.

Omnitrans' fixed route transit system provides scheduled, general public service along planned, predetermined routes in accordance with established frequencies. Those frequencies are generally based on passenger volumes: enough people have to ride each bus so that productivity and fare box recovery standards are met.

OmniLink demand responsive service is available in two areas, Chino Hills and Yucaipa. In addition to providing policy-based service coverage in low-density areas, the Chino Hills OmniLink service is designed to provide feeder service to/from Omnitrans fixed route bus service. The Yucaipa OmniLink provides service to/from neighboring Calimesa, but is not provided for trips that begin and end in Calimesa.

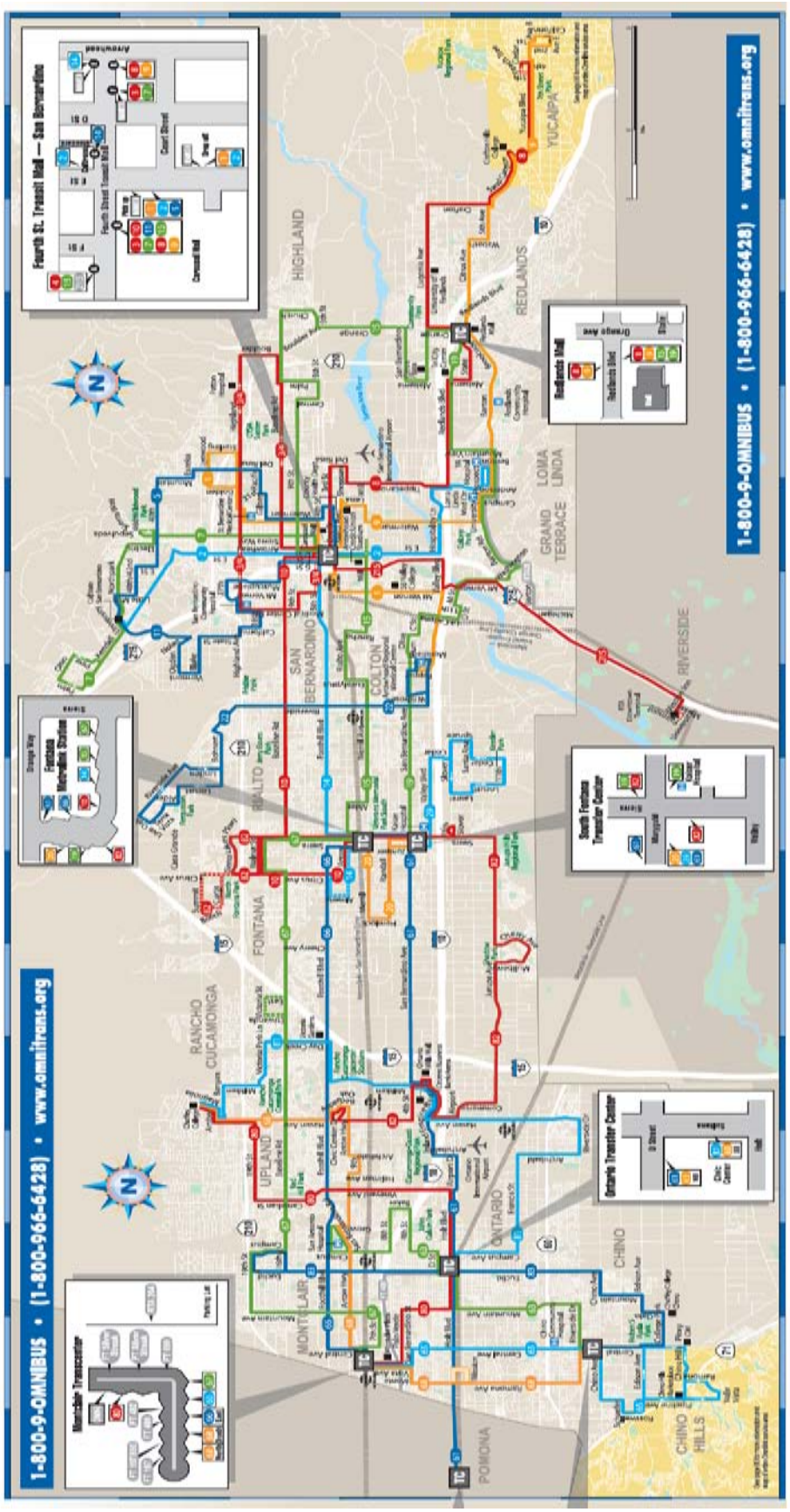


Figure 2-1: Existing Omnitrans Routes

The Americans with Disabilities Act (ADA) requires that fixed route transit operators provide, or ensure the provision of "Complementary" (i.e. comparable) paratransit service for those individuals who, because of their disability, cannot use the regular general public fixed route service. Access service is available through the Omnitrans service area within a 3/4 mile radius on either side of an existing Omnitrans regular bus route. Access service is contracted out to First Transit, and the three zone fare structure is shown in Figure 2-2.

Additional Transit Services

Additional transit services and connections in the Valley are provided by the following transit agencies:

- Riverside Transit Agency, which operates route 204 from Riverside to Montclair with service to Ontario Mills;
- Foothill Transit, which operates local bus and the Silver Streak, a commuter express bus service from the Montclair Transcenter to Downtown Los Angeles;
- Orange County Transportation Authority, which operates route 758 from the Chino Transcenter to the Irvine Spectrum in Orange County;
- METRO, which operates route 484 from Downtown Los Angeles to the Pomona Transcenter;
- Pomona Valley Transportation Authority, which operates Access and Dial-A-Ride services throughout the Pomona Area;
- Mountain Area Regional Transit Authority, which operates the "Off the Mountain Service" route into downtown San Bernardino; and
- Greyhound, a private bus operator that provides service to the cities of Victor Valley and Barstow into downtown San Bernardino.

Table 2-1 provides service information to the existing Transcenter sites in the San Bernardino Valley Existing Transcenters.

Victor Valley

Victor Valley Transit Authority (VVTA) is a Joint Powers Authority (JPA) established in 1991 and comprised of five jurisdictions; the cities of Adelanto, Hesperia, and Victorville, the town of Apple Valley, and several unincorporated areas of San Bernardino County including Phelan, Pinon Hills, Wrightwood, Lucerne Valley, Helendale, and Oro Grande. The Board of Directors includes representatives from the above jurisdictions, who contract out management and operations, with operations overseen by a transportation advisory committee (TAC).

VVTA is the second largest transit operator in San Bernardino County and operates 18 local fixed routes with a mixed fleet of 38 buses. The city of Victorville is served by 12 routes, routes 21, 22, 31, 32, 41, 43, 44, 45, 51, 52, 53 and 54; the city of Hesperia with five routes, routes 44, 45, 46, 48 and 53; the city of Apple Valley with five routes, routes 23, 40, 41, 43 and 47; and Adelanto with three routes, Routes 31, 32 and 33. Buses operate from 6:00 a.m. to 9:00 p.m. Monday through Friday and from 7:00 a.m. to 8:00 p.m. on Saturday. There is no Sunday service. In addition to the 18 fixed-route schedules, VVTA operates a fleet of 27 cutaway vehicles for ADA Complementary paratransit bus services for the Victor Valley Area. Additional fixed route deviation service to Wrightwood, Pinon Hills, Phelan, Helendale, and Lucerne Valley is available.

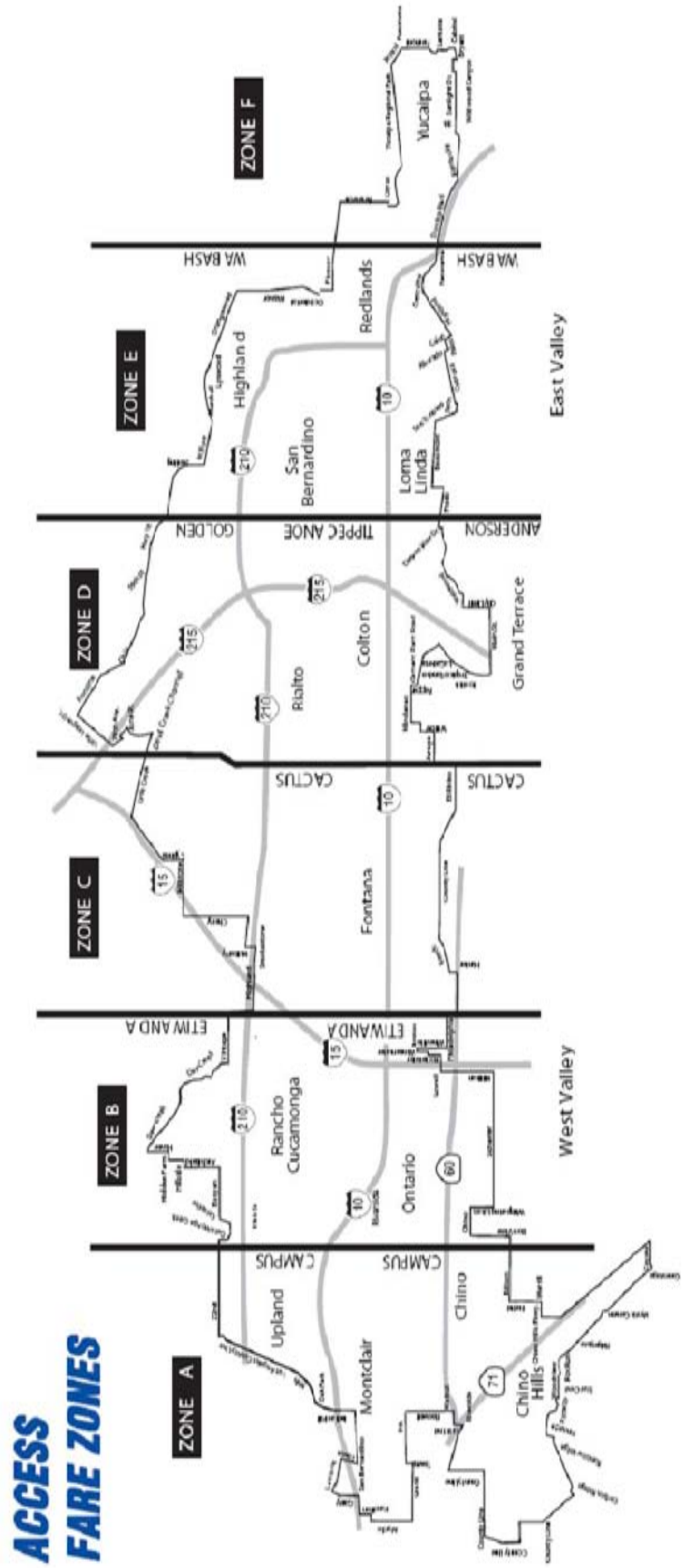


Figure 2-2: Existing Access Fare Zones

Source: Omnitrans, 2009.

Table 2-1: Existing Transcenters

Transit Center	Bus Bays	Services/Routes
Montclair Transcenter	14	Omnitrans: 62, 65, 66, 68
		Regional Transit Connections Available:
		Omnitrans IEC: 90
		RTA Route: 204
		Metrolink: San Bernardino Line
		Foothill Transit: 699, 187, 292, 294, 492, 480, 190, 197, 690, Silver Streak BRT
Chino Transcenter	7	Omnitrans: 62, 63, 65a, 65b, 68, OmniLink
		Regional Transit Connections Available:
		Foothill Transit: 497
		OCTA: 758
Ontario Transcenter	6	Omnitrans; 61, 62, 63, 67, 70, 75
South Fontana Transcenter	4	Omnitrans: 19, 20, 28, 29, 61, 71
Fontana Metrolink Station Transcenter	9	Omnitrans: 10, 14, 15, 19, 20, 61, 66, 67, 71
		Regional Transit Connections Available;
		Metrolink: San Bernardino Line
Redlands Mall	5	Omnitrans: 8, 9, 15, 19
		Regional Transit Connections Available:
		RTA: 36
4th Street Transit Mall (San Bernardino)	14	Omnitrans: 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, 14, 15
		Regional Transit Connections Available:
		MARTA: Off The Mountain Service
		Omnitrans: 215
Inland Center Mall (San Bernardino)	1	Omnitrans: 2
		Regional Transit Connections Available:
		N/A
Ontario Mills Center	4	Omnitrans: 60, 61, 70, 71, 75
		Regional Transit Connections Available:
		RTA: 204
Ontario Airport	1	Omnitrans: 61
		Regional Transit Connections Available:
		Airport Shuttle
Arrowhead Medical Center	4	Omnitrans: 1, 19, 22
Pomona Transcenter	10	Omnitrans: 61
		Regional Transit Connections Available:
		Foothill Transit: 191, 193, 195, 292, 294, 291s, 291n, 480w, 480e, 482
		LAMTA: 484
		Metrolink: San Bernardino Line

Source: Parsons, 2009.

Transit Service into San Bernardino Valley is currently provided by Greyhound Lines. SANBAG and VVTA have implemented a ticket subsidy program that provides discounted fares for trips into San Bernardino Valley and into Barstow.

Other Areas

Morongo Valley & Joshua Tree

MBTA is a JPA that operates in the city of Twentynine Palms, the town of Yucca Valley and in the Morongo Basin. Current operations include 9 deviated fixed route services as well as a limited dial-a -ride service that provides door to door service for seniors and the disabled. Two of the fixed routes connect the Morongo Basin area with Palm Springs. Ready-Ride provides door-to-door service that is divided into zones. The zones are generally split among the communities in the service area, including Yucca Valley, Morongo Valley, Joshua Tree and Twentynine Palms.

Mountain Areas

The Mountain Area Regional Transit Authority (MARTA) is a rural transit agency, organized as a JPA by the city of Big Bear Lake and San Bernardino County. The goal of the JPA is to provide coordinated transit services for all of the mountain communities including, Big Bear Valley, Running Springs, Crestline, Lake Arrowhead and Blue Jay. The agency also provides service "Off the Mountain" to the downtown San Bernardino. MARTA provides local fixed route in the Arrowhead/Crestline area and in Big Bear Valley, dial-a-ride bus services, and intercity commuter express service to downtown San Bernardino.

Barstow

Barstow Area Transit is administered by the City of Barstow and is contracted out. The agency operates five fixed route services to the Barstow area, as well as the communities of Hinkley, Lenwood, Grandview, Yermo, Harvard, Daggett and Newberry Springs.

Needles

The City of Needles administers the Needles Area Transit service, which is contracted out and provides deviated fixed route service. The city also provides Dial-a-Ride service for seniors and persons with disabilities, including to Bullhead City.

2.2 Existing Land Use Plans and Policies

The San Bernardino Valley was first developed towards the end of the 19th century. The introduction of the railroads and the citrus industry in the 1870's enabled the area and the surrounding "citrus belt" to fast become a major economic area. The arrival of Route 66 in the 1920's brought in tourists and migrants and the introduction of the interstate system opened the valley up for real estate development in the 1950's. The real estate boom of the 1950's allowed for a massive suburban expansion and the growth of the employment areas of San Bernardino, Ontario and Riverside that combine to make the Inland Empire, and ultimately the eastern portion of the larger Los Angeles Metropolitan area.

The valley is governed by various small to medium sized cities and unincorporated communities. As the valley evolved from a rural to suburban environment, affordable home ownership has played a leading role in the economic growth and ultimately the land use of each of the cities. As the primarily suburban residential population grew, retail and service industries have grown too, and several major shopping centers serve the region.

Industrial land uses have historically benefited from proximity to the local

highway and rail transportation networks as well as inexpensive land prices when compared to the greater Los Angeles region. As a result there is a large warehousing and manufacturing industry in the valley that is expected to continue to play a large role in the regional and state economies.

Existing Land Use and General Plan Land Use was analyzed from the SCAG regionally adopted travel Demand Model, described in detail in Chapter 4. This Land Use data is shown in Figures 2-3 and 2-4, respectively.

Additionally, a land use survey of existing plans and policies in current General and Specific plans was prepared in May of 2009 for select cities in the valley. The survey was prepared in conjunction with the city outreach process discussed in Chapter 9 and corresponds to the development of the Vision Sustainable Land Use Alternative discussed in detail in Chapter 5. A review of the cities' general plans, many in various states of revision, was prepared to gauge the cities' current thinking on transit as preparation for engaging the cities in the LRTP planning process. The result of the survey is summarized in Table 2-2 below and is included in Appendix A.

Key Activity Centers

As part of the existing plans and policies survey, key activity centers in the San Bernardino valley were identified. Key activity centers are identified to analyze potential improvements in transit service. The following key activity centers have been identified in the San Bernardino valley and are presented in Figure 2-5.

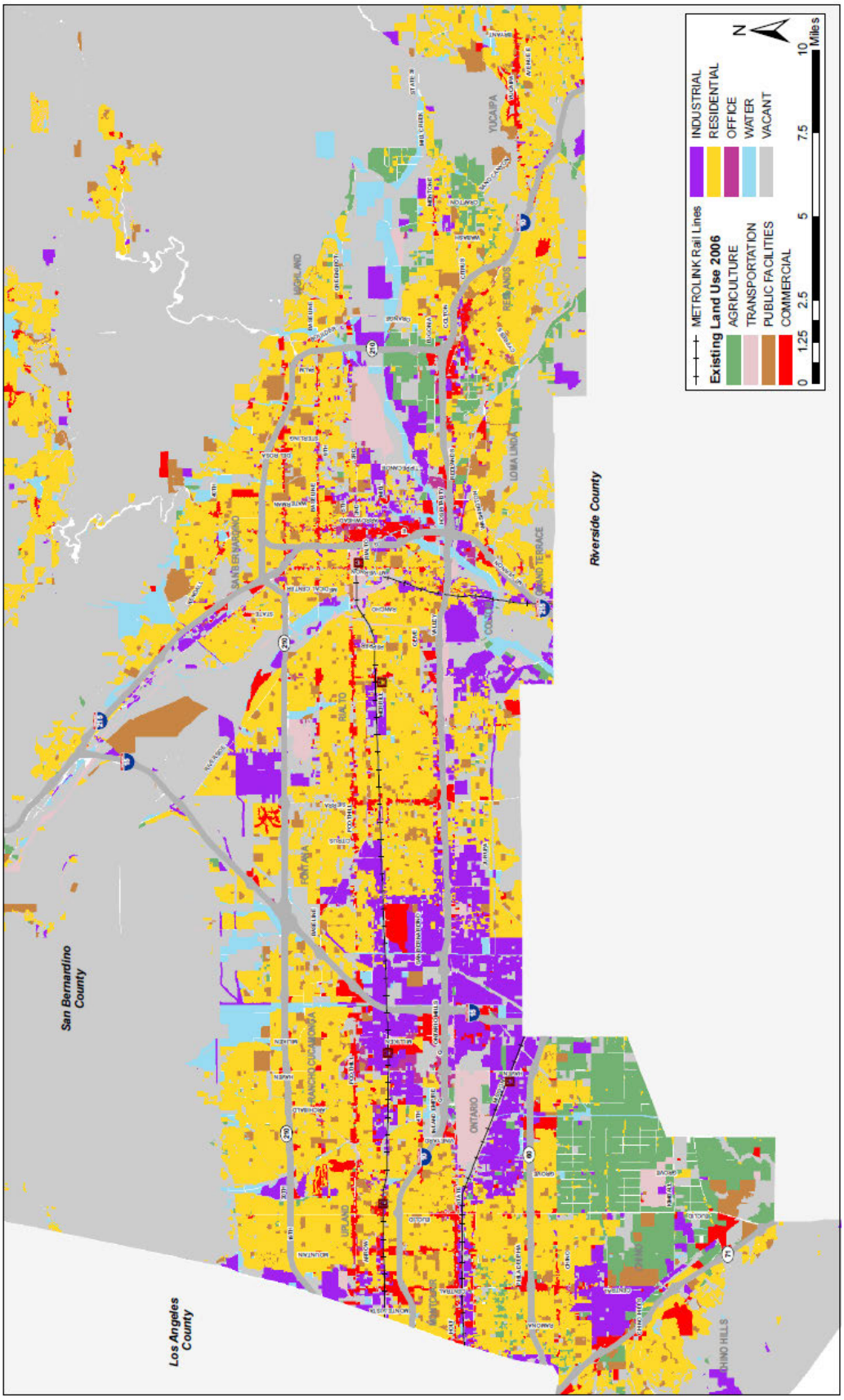
Planned Development Areas

As part of the City outreach efforts that occurred in May of 2009, the following areas have been identified to accommodate planned growth.

Table 2-2: Summarized Results of Land Use Survey.

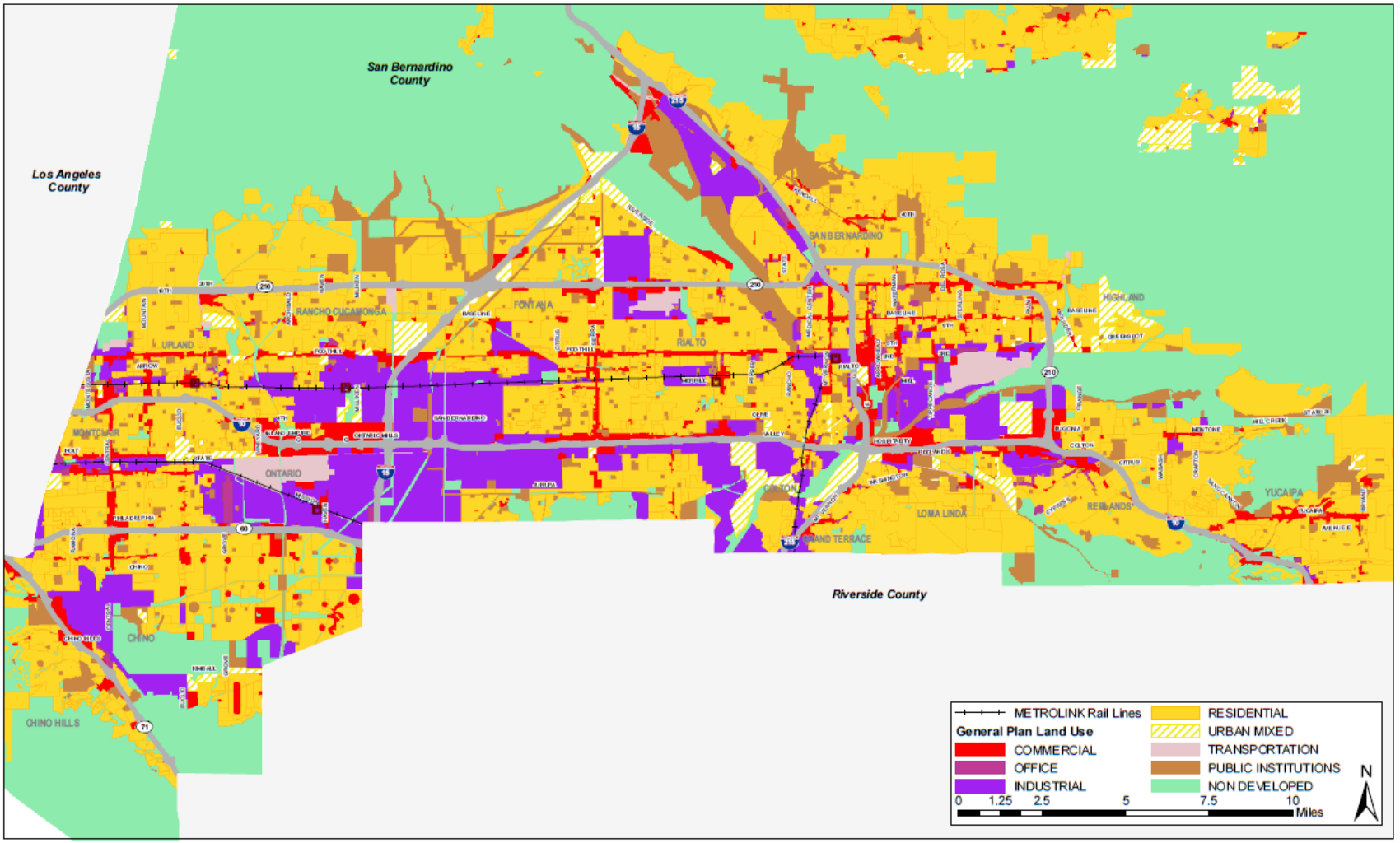
	Chino	Chino Hills	Colton	Fontana	Highland	Loma Linda	Montclair	Ontario	Rancho Cucamonga	Redlands	Rialto	San Bernardino	Upland
Mixed Use Designation	X	X	X	X	X				X				X
Maximum Density (DU/AC)	40	35	30	40	30	20	40	25	30	27	35	36	30
Transit Supportive Policies			X	X		X	X	X		X	X	X	
Parking Management Strategies	X	X	X		X	X					X	X	X
TOD Policies	X					X		X	X			X	
Urban Design Policies	X	X		X	X	X		X	X	X	X	X	X
Growth Management	X	X				X		X					

Source: Parsons, 2009.



Source: Parsons, 2009.

Figure 2-3: Existing Regional Land Use



General Plan Land Use

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 2-4: Existing Regional General Plan Land Use

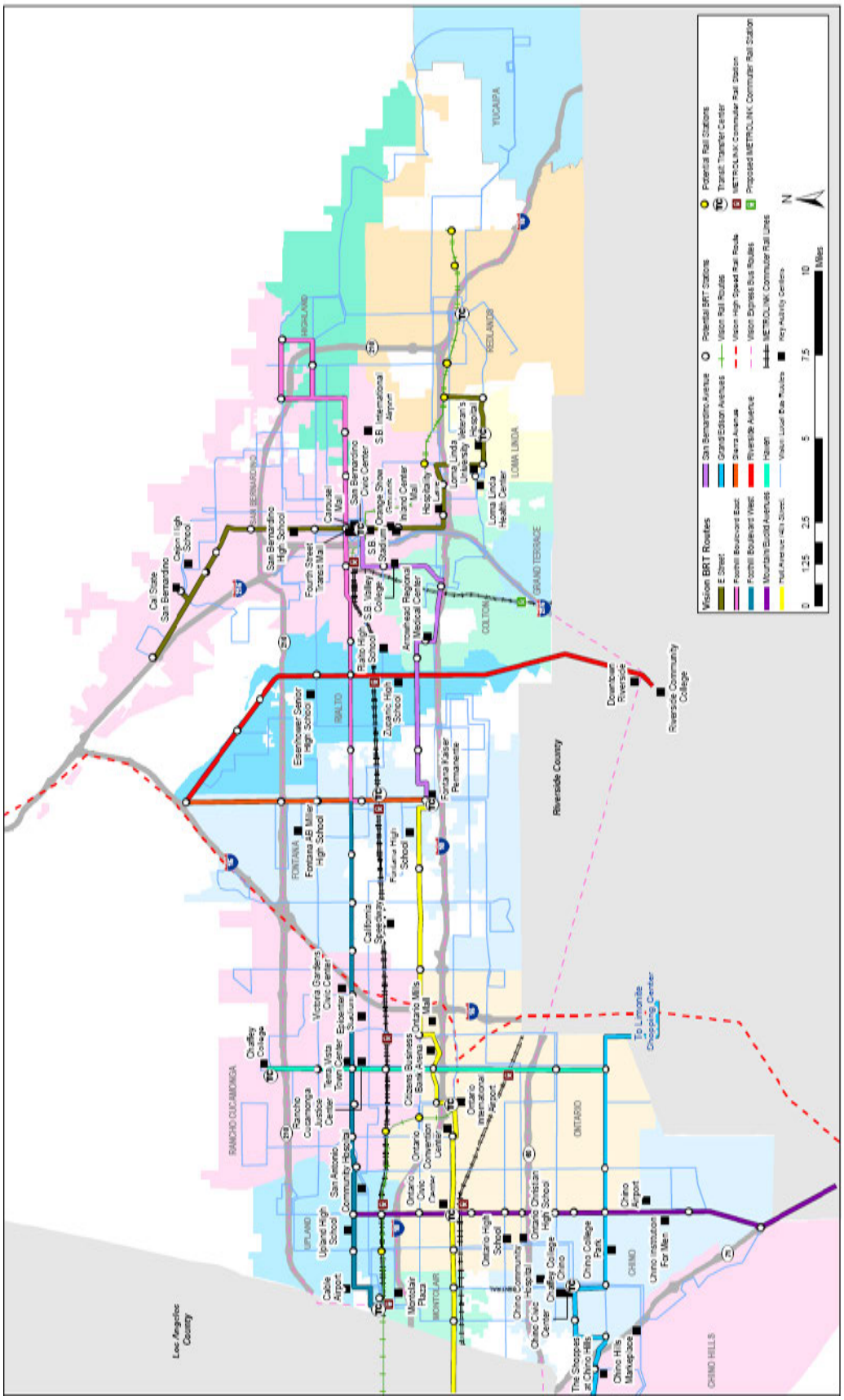


Figure 2-5: Key Activity Centers

Source: Parsons, 2009.

Chino

The city of Chino is developing the Ag Preserve as a TOD based development with a maximum 40 dwelling units per acre (DU/Ac) for residential land uses. This specific plan area is set to accommodate most of the growth planned in the city. A second area of growth is around the current Transcenter which is planned to develop into a civic center.

Chino Hills

The Shoppes, a Specific Plan area, has mixed uses and a hotel in the downtown and is located next to the civic center. It features over 70 retail tenants and 60,000 square feet

The Shoppes, Chino Hills

of 2nd story office space. The surrounding trade area encompasses a population of one million. The master plan for the Shoppes at Chino Hills includes a new Chino Hills Community Park and a new Chino Hills Civic Center, featuring a police department, library, city hall and five administration facilities.

Colton

The city is currently working on two Specific Plan areas, the West Valley Specific Plan which is the location of one of the Compass Blueprint sites and covers 285 acres, next to Arrowhead Medical Center. The second Specific Plan is for the Pellissier Ranch, an urban village near a proposed Metrolink station. The superblock area would have about 4,200 dwelling units plus office and retail at densities up to 30 DU/Ac.

The city is also looking to accommodate planned growth along Mount Vernon Street and at Colton Avenue and Valley Boulevard.

Fontana

Fontana is currently developing the Metrolink station and Transcenter site to include more intensive uses including affordable senior housing. Fontana is also accommodating planned growth on Foothill Boulevard and on Baseline Road.

Highland

The City of Highland is planning for growth in various locations throughout the city. Planned developments include:

- East Highlands Ranch Planned unit development to the east of SR-30 has been the prime shaper of the development in the city.
- Sunrise Ranch is a potential residential development that may accommodate 2,000 to 10,000 dwelling units and up to 30 DU/Ac. There is no specific plan for this area at this point.
- Many of the midblock commercial uses along Baseline, which is the principal east-west corridor through the city, have been re-designated as medium-density residential uses.
- Golden Triangle, a specific plan area formed by two creeks and Boulder Avenue is a master-planned, mixed-use development.

- 5th Street and Victoria Avenue are planned to be major employment centers to support the San Bernardino airport, that includes Business Parks and other industrial land uses.

Loma Linda

Loma Linda has recently passed a city ordinance that manages growth in the city. Planned growth areas are located next to transit stations, and for Loma Linda University housing.

Montclair

The existing commercial and industrial land uses north of I-10 and between Holt Boulevard and Mission Boulevard attract many people. Residential neighborhoods are predominant in the southern portion of the I-10 Freeway up to Holt Boulevard.

The North Montclair Downtown Specific Plan proposes a mixed-use, transit-oriented development between the Montclair Gold Line/Metrolink station and the Montclair Plaza. Mixed-use development is intended to create a transit village with a range of medium to high-density housing, retail, commercial, and office development.

Montclair Transcenter, Montclair

This development will reinforce the significance of the Montclair Transcenter as an Omnitrans service focal point.

Ontario

Major commercial developments in Eastern Ontario include:

- Ontario Mills: 8 million square feet of office, commercial, residential, and industrial uses.

Ontario Mills, Ontario

- CA Commerce center: 1420 acres of development.
- Centerlake: 1.3 million square feet of commercial and business uses.
- Village industrial park: Large-scale warehousing and distribution uses for Hyundai, Honda and Inland Container.

Unique areas that have special attention for development are:

- Citizens Bank Arena
- Grove Avenue Corridor Business Park
- Town Center Study Area
- East Holt Boulevard Study Area

Citizens Bank Arena, Ontario

Rancho Cucamonga

Rancho Cucamonga aims to increase mixed-use development along Foothill Boulevard and the Empire Lakes area. Additionally, the city aims to consolidate open space preserves. The following Specific Plans and Planned Communities have been approved:

- Foothill Boulevard Visual Improvement Plan: The plan proposes a series of activity centers and gateways, linked through a unifying streetscape design.

Foothill Boulevard, Rancho Cucamonga

- Etiwanda Specific Plan: This rural area is located in the northeast corner of the city and the purpose of the Plan is to ensure long-term rural character.
- Etiwanda North Specific Plan: The General Plan aims to make open space a prominent feature in these 6,840 acres of land, located just above the Etiwanda Specific Plan area.
- Victoria Community Plan: With Victoria Park Lane as the central corridor, the City plans to build residential villages and related uses in the 2,150 acres of land bounded on the north by Highland Avenue, the east by Etiwanda Avenue, and the south and west by the I-15, Arrow Route, Base Line Road, Milliken, Pacific Electric Trail and Deer Creek.
- Terra Vista Community Plan: This central core area is planned for a mixed-use development along Foothill Boulevard and Haven Avenue.

Redlands

The Downtown Redlands Specific Plan makes specific proposals for the development of the downtown area between Redlands Boulevard and the I-10 Freeway. This includes two- and three-story mixed-use development in the Town Center District and industrial buildings in the Service Commercial District.

Rialto

The city of Rialto has identified Foothill Boulevard and its downtown area for potential infill development. The downtown area will bring more mixed-uses including commercial and residential development.

Vacant sites on Foothill Boulevard are being looked at for redevelopment.

San Bernardino

The City of San Bernardino is currently developing the downtown specific plan for revitalizing the downtown area. The plan will include mixed development as part of the revitalization and is based on the transit

village concept. The city is also planning for development at the San Bernardino International Airport for industrial uses.

Looking North on E Street, Downtown San Bernardino

Upland

The City of Upland is reopening the Vision Plan for Foothill Boulevard. Also, there is a Downtown Specific Plan, which allows 30 or more DU/Ac. The City is especially interested in planning in the southwestern portion of the city, which has been recently annexed and is near the Montclair Transit Center.

The Downtown Specific Plan for Historic Downtown Upland is meant to guide future growth and economic development in this area of the City. It will address land use, public facilities and services, urban design, transportation, housing, and other issues of interest to the community and provide specific guidance for private property owners, businesses, and residents.

The College Park Specific Plan is a 39.7-acre mixed-use development consisting of two land use components; commercial and residential. The commercial component is approximately 8.0 acres and consists of a 40,500 square foot retail center (shops and restaurants); a 4,000 square foot service station and mini-mart. The square footages described above are considered the maximum allowed. The residential component is approximately 31.7 acres and consists of a mixture of single-family units, multi-family units, private recreation areas/ facilities for each residential use and a park.

Development on Foothill Boulevard, Upland

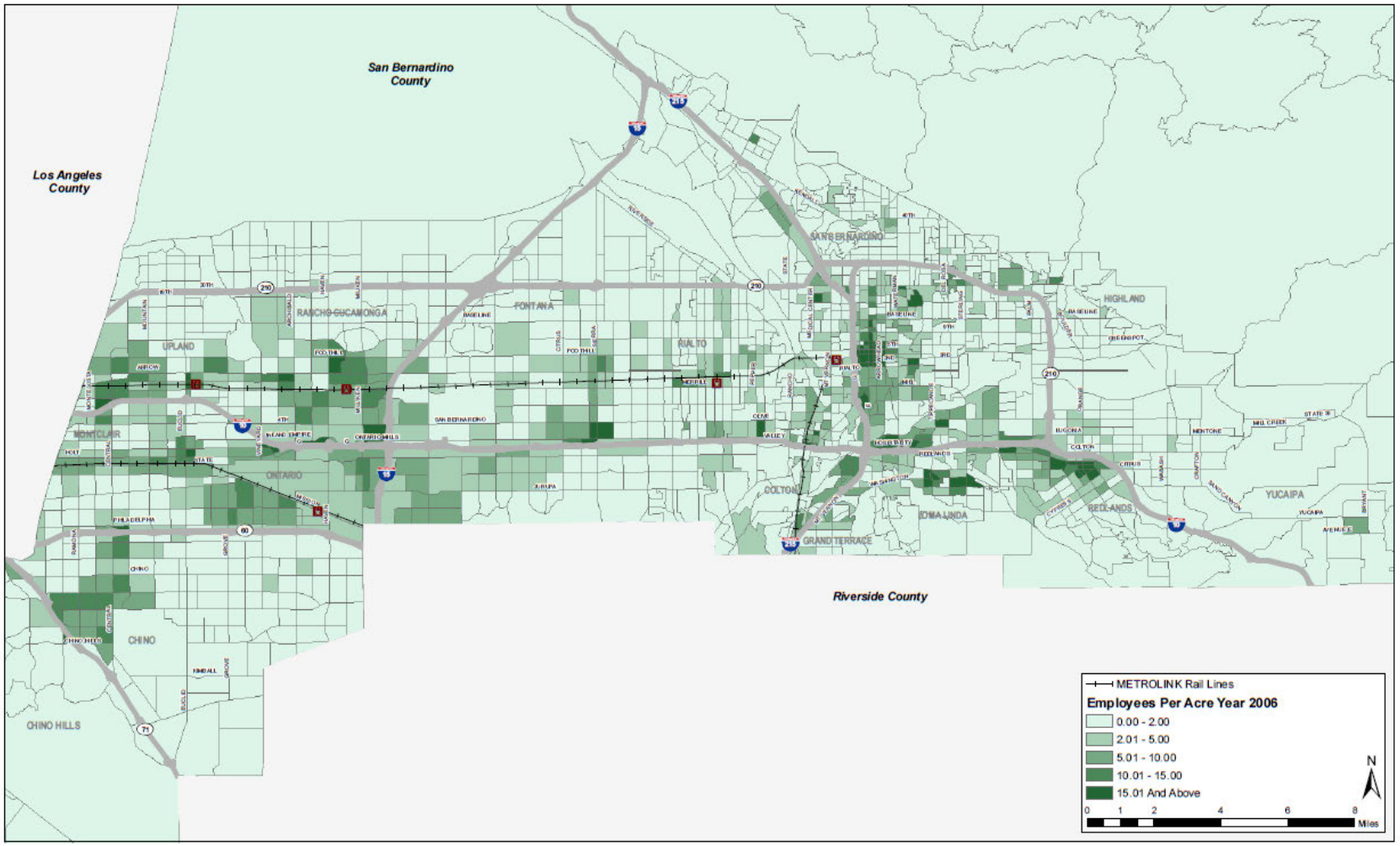
2.3 Existing Demographic and Ridership Profile

Existing demographic data is provided in the SCAG Travel Demand Model, described in detail in Chapter 4. 2006 levels of employment and population densities were analyzed as part of the LRTP, and are shown in Figures 2-6 and 2-7, respectively.

Year 2006 population and employment data for San Bernardino Valley cities are summarized in Table 2-3.

This table shows that San Bernardino is currently the largest city in the valley, with just over 200,000 residents, followed by the cities of Ontario, Rancho Cucamonga, and Fontana.

The City of Ontario has the highest employment in the region, followed by the cities of San Bernardino and Rancho Cucamonga.

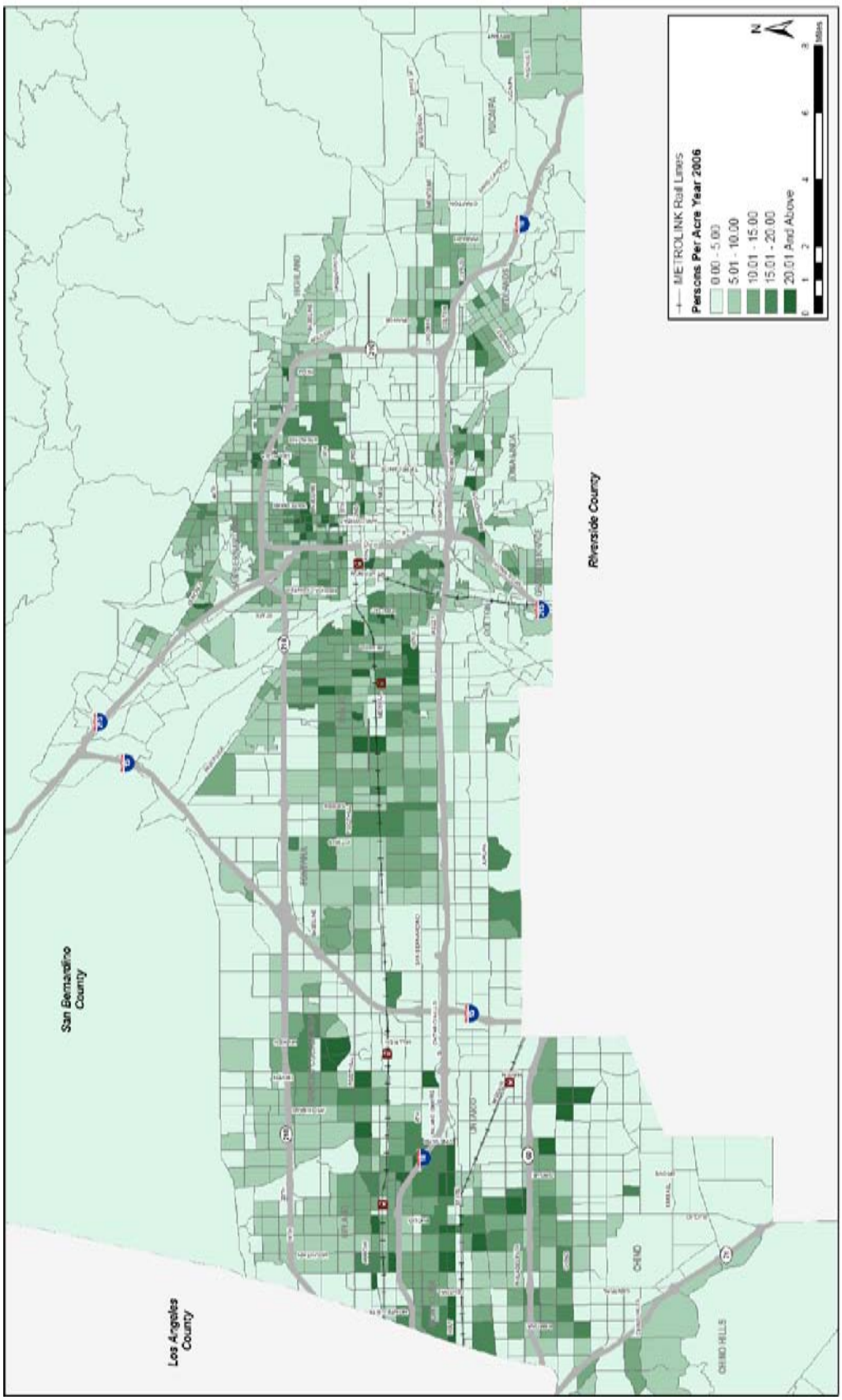


Existing Employment Density
DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 2-6: Existing Employment Density



Source: Parsons, 2009.

Figure 2-7: Existing Population Density

Table 2-3: Year 2006 Population and Employment Data - San Bernardino Valley Cities

City	Population	Households	Employment
Chino	78,116	18,902	12,915
Chino Hills	78,251	22,226	13,074
Colton	53,177	15,300	6,102
Fontana	165,292	41,313	47,759
Grand Terrace	12,505	4,293	8,971
Highland	52,059	14,873	45,790
Loma Linda	22,518	8,429	3,075
Montclair	36,361	9,171	16,157
Ontario	174,173	45,313	16,771
Rancho Cucamonga	167,474	50,888	15,969
Redlands	71,319	25,202	3,049
Rialto	101,037	25,665	110,886
San Bernardino	203,503	58,334	61,464
Upland	74,381	25,323	22,750
Yucaipa	50,570	17,703	3,451
Unincorporated	124,466	32,578	35,244
San Bernardino Valley Total	1,465,202	415,513	423,427

Source: SCAG, 2009.

On-Board Transit Surveys

On Board surveys were collected for Metrolink, and prepared for transit operators in the county to identify trip needs and priorities tor transit patrons, as well as provide trip and demographic information.

In April through June, 2004, Strategic Consulting and Research (SCR) conducted an independent survey of weekday Metrolink passengers for the Southern California Regional Rail Authority (SCRRA). In 2005, Strategic Consulting and Research (SCR) conducted another independent survey of weekend Metrolink passengers for the SCRRA.

In April, 2005, AMPG surveyed fixed route and demand-response riders from the Barstow, MARTA, MBTA, and Needles transit systems.

In March and April, 2006, AMPG surveyed fixed route and demand-response riders from the Omnitrans system. This survey addressed the same demographic issues as the surveys of the other transit providers, but the survey of fixed route riders on Omnitrans was geared towards collection of origin-destination data, instead of the attitudinal data collected in the surveys of the smaller systems.

In April, 2006, the Victor Valley Transit Authority (VVTA) conducted an independent survey of its passengers.

The complete results of these surveys can be found in Appendix B, Profile of Transit Riders in San Bernardino County. A summary is provided in Table 2-4.

Senior Concentrations

The proportion of the San Bernardino Valley population age 65 and over is 7.4%. This is below the proportion of the California population age 65 and over (10.6%). The majority of the cities have elderly population proportions lower than the State average. The exceptions are Grand Terrace (10.7%), Loma Linda (15.4%), Upland (11.1%) and Yucaipa (15.5%).

Table 2-4: Survey Results

	Service Provider							County Total	
	Omnitrans	Metrolink	VVTA	MARTA	MBTA	Barstow	Needles	Unweighted	Weighted
Daily Riders	43,000	6,500	1,790	800	730	620	180		53,620
Gender									
(Sample Size)	3,915	2,570	728	263	268	212	77	8,033	
Male	50%	47%	45%	53%	59%	40%	36%	49%	49%
Female	50%	53%	55%	47%	41%	60%	64%	51%	51%
Age									
(Sample Size)	3,789	2,457	698	255	257	195	65	7,716	
12 to 15	2%	0%	8%	8%	2%	2%	0%	2%	2%
16 to 19	15%	3%	17%	13%	16%	11%	3%	11%	13%
20 to 29	28%	15%	23%	22%	27%	21%	23%	23%	26%
30 to 39	20%	22%	16%	19%	16%	21%	17%	20%	20%
40 to 49	18%	30%	18%	21%	16%	21%	20%	22%	19%
50 to 59	12%	23%	11%	8%	12%	10%	11%	15%	13%
60 or older	5%	7%	6%	10%	11%	14%	26%	7%	6%
Ethnicity[1]									
(Sample Size)	397	2,489	713	263	263	212	72	4,409	
African American	29%	24%	26%	5%	14%	26%	3%	23%	27%
Asian/Pacific Islander	2%	12%	3%	2%	4%	1%	0%	8%	3%
Caucasian	22%	32%	37%	61%	62%	39%	54%	36%	25%
Hispanic	43%	29%	27%	19%	14%	21%	17%	28%	39%
Other/Multiple	5%	3%	7%	13%	7%	13%	26%	5%	5%
Household Income[2]									
(Sample Size)	3,303	2,332	611	242	230	183	65	6,966	
Less than $20,000	53%	11%	58%	54%	65%	86%	85%	41%	49%
$20,000 to $29,999	18%	8%	22%	14%	17%	4%	6%	14%	17%
$30,000 to $39,999	9%	9%	4%	10%	5%	4%	2%	8%	9%
$40,000 to $49,999	6%	8%	7%	5%	2%	2%	3%	7%	6%
$50,000 to $59,999	4%	10%	3%	10%	4%	2%	0%	6%	5%
$60,000 to $74,999	3%	14%	3%	1%	3%	0%	2%	7%	4%
$75,000 to $99,999	2%	17%	1%	4%	1%	0%	2%	7%	4%
$100,000 to $149,999	1%	16%	1%	2%	1%	1%	2%	6%	3%
$150,000 to $199,999	1%	4%	0%	1%	0%	1%	0%	2%	1%
$200,000 or more	1%	3%	0%	1%	1%	1%	0%	1%	1%
Did Transit Riders Have an Auto Available for their Trip?									
(Sample Size)	3,906	2,531	731	270	272	217	79	8,006	
Yes	15%	75%	22%	16%	17%	6%	8%	34%	22%
No	85%	25%	78%	84%	83%	94%	92%	66%	78%
Driver's License Possessed by Rider? [3]									

[1] Omnitrans data for this question based on 2003 Survey (other socioeconomic questions based on data collected in 2006 survey).
[2] VVTA shares for income groups above $50,000 are estimated because VVTA survey used different income groups than other surveys.
[3] Metrolink survey did not ask riders about the possession of driver's licenses.

	Service Provider							County Total	
	Omnitrans	Metrolink	VVTA	MARTA	MBTA	Barstow	Needles	Unweighted	Weighted
Daily Riders	43,000	6,500	1,790	800	730	620	180		53,620
(Sample Size)	3,781	N/A	717	271	273	221	79	5,342	
Yes	36%	N/A	39%	42%	51%	36%	35%	37%	36%
No	64%	N/A	61%	58%	49%	64%	65%		64%
Driver's License Possessed by Someone Else in Household?									
(Sample Size)	1,982	N/A	457	147	125	134	48	2,893	
Yes	73%	N/A	69%	65%	54%	43%	46%	69%	72%
No	27%	N/A	31%	35%	46%	57%	54%	31%	28%
Average Household Size									
(Sample Size)	3,838	N/A	N/A	254	250	191	64	4,597	
Mean	4.1	N/A	N/A	3.1	3.5	3.7	3.1	4.0	4.1
Median	4	N/A	N/A	3	3	3	3	4	4
Do You Have a Permanent Disability?[4]									
(Sample Size)	3,831	N/A	656	266	267	214	75	5,309	
Yes	15%	N/A	22%	19%	22%	30%	37%	17%	16%
No	85%	N/A	78%	81%	78%	70%	63%	83%	84%
What Type of Disability?[5]									
Daily Riders	6,450	N/A	399	151	161	186	67		7,015
(Sample Size)	465	N/A	182	48	57	60	23	835	
Mobility	47%	N/A	51%	63%	60%	50%	61%	50%	51%
Hearing	16%	N/A	18%	17%	12%	7%	13%	15%	17%
Sight	11%	N/A	10%	19%	16%	20%	13%	12%	12%
Other	45%	N/A	21%	27%	35%	37%	30%	37%	45%
Frequency of Usage of Transit Riders[6]									
(Sample Size)	4,055	2,383	693	271	267	221	78	7,968	
5-7 days per week	62%	67%	59%	34%	35%	42%	24%	61%	62%
3-4 days per week	15%	18%	26%	32%	28%	32%	55%	19%	17%
1-2 days per week	16%	11%	10%	17%	19%	16%	12%	14%	15%
less than 1 day per week	6%	4%	5%	17%	19%	10%	9%	6%	6%
Duration of Usage of Transit Riders									
(Sample Size)	3,962	2,614	751	272	271	223	78	8,171	
More than 2 Years	49%	53%	46%	46%	38%	41%	51%	49%	49%
1-2 Years	21%	15%	17%	22%	21%	20%	23%	19%	20%
6-12 Months	13%	13%	11%	10%	10%	10%	14%	13%	13%
Less than 6 Months	17%	19%	26%	22%	31%	29%	12%	19%	18%
Primary Trip Purpose									
(Sample Size)	4,569	2,574	757	235	212	144	53	8,544	
Work/Work Related	41%	87%	40%	34%	27%	25%	8%	54%	46%
Shopping	11%	0%	12%	14%	21%	38%	58%	9%	10%
Medical/Personal	7%	2%	18%	22%	22%	27%	23%	8%	8%
Recreation/Social	12%	5%	2%	12%	13%	1%	6%	9%	11%

[4] The Metrolink survey did not ask riders about their disabilities.
[5] The Metrolink survey did not ask riders about their disabilities.
[6] The Metrolink and VVTA surveys used different response categories, so some responses are interpolated.

	Service Provider							County Total	
	Omnitrans	Metrolink	VVTA	MARTA	MBTA	Barstow	Needles	Unweighted	Weighted
Daily Riders	43,000	6,500	1,790	800	730	620	180		53,620
School	16%	4%	21%	11%	10%	3%	2%	12%	14%
Other	13%	1%	8%	7%	8%	6%	4%	8%	11%
Access Mode									
(Sample Size)	4,569	2,432	743	N/A	N/A	N/A	N/A	7,744	
Walk	73%	2%	69%	N/A	N/A	N/A	N/A	51%	66%
Transfer	16%	6%	15%	N/A	N/A	N/A	N/A	13%	15%
Drive Auto	1%	69%	7%	N/A	N/A	N/A	N/A	23%	10%
Auto Passenger	4%	21%	7%	N/A	N/A	N/A	N/A	10%	6%
Bicycle	2%	1%	3%	N/A	N/A	N/A	N/A	2%	2%
Other	1%	0%	0%	N/A	N/A	N/A	N/A	1%	1%
Egress Mode									
(Sample Size)	4,569	1,945	723	N/A	N/A	N/A	N/A	7,237	
Walk	72%	10%	65%	N/A	N/A	N/A	N/A	56%	67%
Transfer	17%	51%	27%	N/A	N/A	N/A	N/A	28%	23%
Drive Auto	0%	17%	2%	N/A	N/A	N/A	N/A	5%	2%
Auto Passenger	3%	20%	4%	N/A	N/A	N/A	N/A	8%	5%
Bicycle	2%	2%	3%	N/A	N/A	N/A	N/A	2%	2%
Other	1%	1%	0%	N/A	N/A	N/A	N/A	1%	1%

Six percent of all riders in the county are over 60 years of age. The shares of elderly riders are directly related to the urban nature of the service areas. The rapidly growing suburban areas of San Bernardino Valley and Victor Valley have relatively low shares of elderly riders. The more secluded rural areas have increasingly high shares of elderly riders, peaking at 26 percent in Needles

Poverty and Vehicle Ownership

The proportion of households in the San Bernardino Valley living below the poverty line is 15.6%. This is higher than the proportion of California households living below the poverty line (10.6%). Cities with high concentrations of households below the poverty line include Colton (19.6%), Fontana (14.7%), Highland (21.5%), Loma Linda (15.1%), Rialto (17.4%), San Bernardino (27.6%), and the community of Muscoy (36.5%). A number of these communities also have high proportions of households without a vehicle. Almost 11% of households in Colton do not own a vehicle, while the proportions in Loma. Linda and San Bernardino are 11.2% and 10.5% respectively.

Demographics

Two service providers serve more males than females (MARTA and MBTA) and four providers serve more females than males (Metrolink, VVTA, Barstow and Needles).

Almost two-thirds of all transit riders in San Bernardino County are between 20 and 49 years of age.

The median age for all transit riders is approximately 35 years of age. The riders of all service providers have median ages between 30 and 39 years of age except Metrolink and Needles, which have median ages between 40 and 49 years of age.

Fifteen percent of all riders in the county are less than 20 years of age. VVTA and MARTA have the highest shares of young riders, with over 20 percent on each of those systems. Metrolink and Needles each have fewer than five percent shares of young riders.

Hispanics represent a plurality of transit riders in San Bernardino County, with 39 percent of total riders. However, Omnitrans is the only service provider that has more Hispanic riders than any other ethnic group.

African-Americans represent the second highest share of transit riders in the county, with 27 percent of the countywide transit ridership.

Caucasians, who account for only one-quarter of the total transit riders in the county, represent either a plurality or a clear majority of riders on each of the other transit operators (besides Omnitrans).

Other/Multiple race riders account for five percent of countywide ridership, with shares of greater than ten percent observed on MARTA, Barstow, and Needles services.

Asian/Pacific Islanders account for only three percent of total ridership. The only system that carries a significant share of Asian/Pacific Islanders is Metrolink, with a 12 percent share.

"Choice" Riders

Transit riders who have an auto available for their trips are assumed to be "choice riders". Transit riders who do not have an auto available for their trips are assumed to be "captive riders". Overall, only 22 percent of the transit riders had an auto available in their household for their transit trip. Three-quarters of Metrolink riders had an auto available for their trip. Metrolink is the only service provider with more than a 22 percent share of choice riders.

Almost half of all transit riders in San Bernardino County have household incomes of less than $20,000 per year. All service providers except Metrolink have median incomes of less than $20,000 except Metrolink, which has a median income of over $60,000.

Barstow and Needles had the highest shares of captive riders, both of which had more than 90 percent of their riders claiming that they did not have an auto available to make their trip.

Another measure used to differentiate between choice riders and captive riders is the possession of a driver's license. The survey of Metrolink riders did not include questions regarding the possession of driver's licenses. Table 2-4 shows that only 36 percent of the public bus riders in San Bernardino County possessed driver's licenses. MBTA is the only operator with more than half of the riders reporting that they possessed a driver's license. The table also shows that approximately 70 percent of the transit riders who do not have driver's licenses live in households where someone else does own a driver's license.

The surveys of Metrolink and VVTA riders did not include questions regarding household size. The table shows that the average household size for transit riders in San Bernardino County is approximately four persons per household. The MARTA and Needles services reported the smallest average household sizes in the county.

The survey of Metrolink riders did not include questions about disabilities. Approximately one-sixth of all transit riders in San Bernardino County have permanent disabilities. Omnitrans carries the smallest proportion of disabled passengers not including access service (15 percent), and Needles and Barstow carry the largest shares

(37 and 30 percent, respectively). The most commonly stated disability for all service providers was mobility-related disability. Riders were allowed to claim more than one disability.

Transit Usage

Transit riders were asked how often they used the fixed-route transit services. More than sixty percent of transit riders in San Bernardino County use transit at least five days per week. The services that have the greatest percentages of "regular" passengers (those who use the service at least five days per week) are Metrolink and Omnitrans, with 67 percent and 62 percent, respectively. The services that have the highest percentages of "occasional" riders (those who use the service twice per week or less) are MARTA and MBTA, both of which have more than one-third of their ridership in that category.

Transit riders were asked how long they have used the fixed-route transit services. Almost half of fixed-route transit riders in San Bernardino County have used transit for at least two years. The services that have the greatest percentages of "long-time" passengers (those who use the service for at least two years) are Metrolink and Needles, with 53 percent and 51 percent, respectively. The services that have the highest percentages of "new " riders (those who have used the service for less than six months) are MBTA and Barstow, with 31 percent and 29 percent, respectively.

Transit riders were asked to give the primary purpose of their transit trip. The most common trip purpose for transit riders in San Bernardino County is for work or work-related trips, with 46 percent of the total ridership. However, the seven services varied widely in the percentage of work trips on their services, from 8 percent on Needles to 87 percent on Metrolink.

The second most common trip purpose was for school trips, with 14 percent of the total transit trips in the county. The percentage of riders making school trips also varied widely, from greater than twenty percent of riders on VVTA, to less than five percent of riders on Metrolink, Barstow and Needles.

Shopping trips were the most common trip purposes for Needles (58 percent) and Barstow (38 percent) transit riders.

Transit riders on three of the service providers were asked how they got from their origin site to their transit stop. The surveys of the smaller bus services (MARTA, MBTA, Barstow and Needles) did not include questions relating to access modes. Walking was the most common access mode for fixed-route transit riders in San Bernardino County, with 66 percent of the total ridership. Other common modes of access are transferring from other transit vehicles (15 percent), driving (10 percent) and getting a ride (6 percent).

The access modes for bus riders and Metrolink riders were completely different. Walking is a much more likely mode of access to transit for bus riders (approximately 70 percent) than for Metrolink riders (2 percent). Meanwhile, driving or getting a ride is a much more likely mode of access to transit for Metrolink riders (90 percent) than for bus riders (5-15 percent).

Transit riders on three of the service providers were asked how they got from their transit stop to their final destination. The surveys of the smaller bus services (MARTA, MBTA, Barstow and Needles) did not include questions relating to egress modes.

Walking was the most common egress mode for fixed-route transit riders in San Bernardino County, with 67 percent of the

total ridership. Other common modes of egress are transferring to other transit vehicles (23 percent), and getting a ride (5 percent).

The egress modes for bus riders and Metrolink riders were completely different. Walking is a much more likely mode of egress to transit for bus riders (approximately 70 percent) than for Metrolink riders (10 percent). Metrolink riders are much more likely to transfer to another transit route (51 percent vs. 17 percent for Omnitrans riders and 27 percent for VVTA riders). Driving or getting a ride is also a much more likely mode of egress from transit for Metrolink riders (37 percent) than for bus riders (3-6 percent).

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Chapter 3 The Transportation / Land Use Connection

3.1 Introduction

The LRTP is intimately connected with planned land use. Land use plans and policies that promote and guide increased development density along transportation corridors help to ensure the vitality of transit networks and the land-uses that encourage transit usage. Conversely, continued growth patterns of low density suburban development will result in an environment that is not conducive to the development and implementation of transit alternatives.

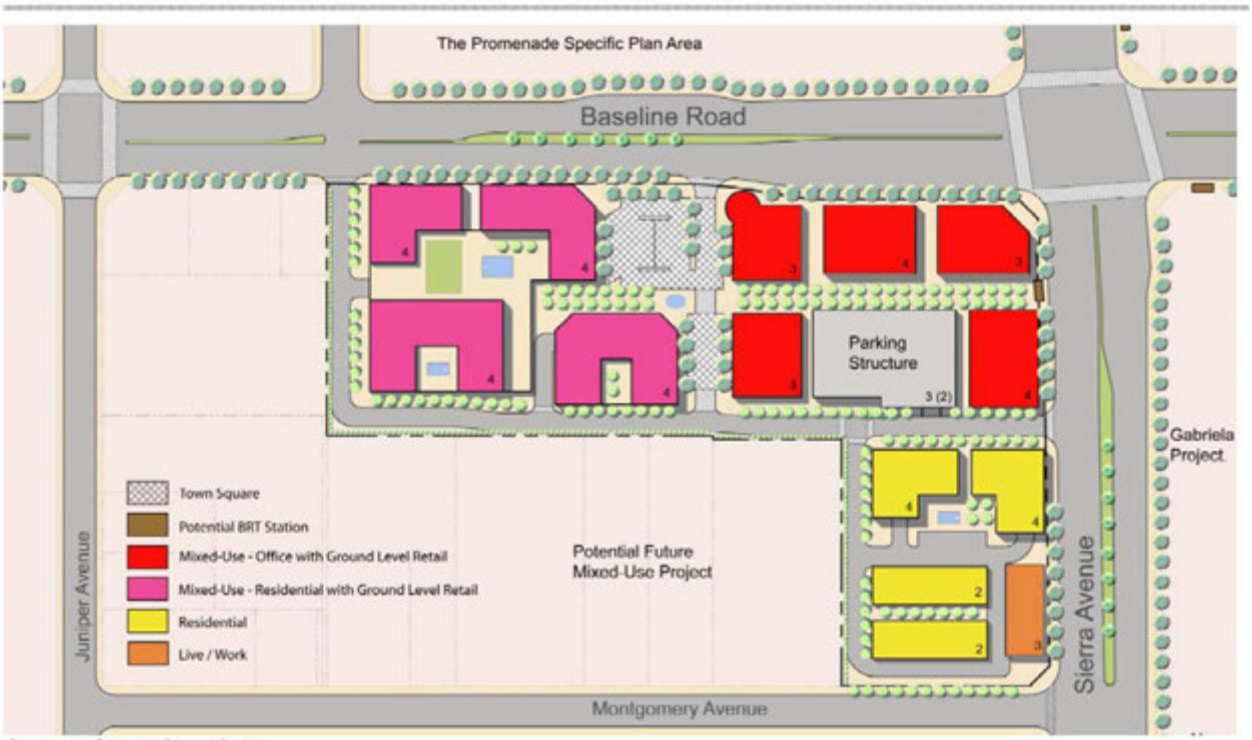
This synergy between land use and transportation is a goal of the "livable communities" or "smart growth" philosophies. Experience in other parts of the country has shown that concentrating development near transit stations and providing linkages to stations, often called Transit Villages or Transit-Oriented-Development (TOD), is an effective way to shift more trips to transit from automobile-associated modes of travel. This relief in traffic congestion helps to improve the overall environmental quality for both local communities and the County by protecting mature, established neighborhoods as well as environmentally sensitive areas.

The passage of SB 375 in November of 2008 affirms the connection of land use and transit. As discussed in Chapter 1, SB 375 prioritizes state transportation funds to transportation projects that promote the goals of reducing greenhouse gas emissions from passenger vehicles. TOD's are a key element of SB 375, and as part are eligible for streamlined environmental clearance.

Development of the LRTP Vision Alternatives presented in Chapter 5, occurred as part of a collaborative planning process that worked closely with the *SANBAG Transportation – Land Use Integration Project*, under the *Southern California Associated Governments (SCAG) Compass Blueprint 2% Strategy Program* to develop integrated land use and transportation planning concepts for selected cities in the San Bernardino Valley. The SANBAG Transportation – Land Use Integration Project identified seven potential TOD opportunity sites along mass transit corridors in the valley which are illustrated in Figure 1-1. The SANBAG Transportation – Land Use Integration Project assisted local communities in developing land use concepts for these identified sites, as shown in Figure 3-1 to create catalysts for economic development, improve transit ridership, and assist SANBAG in their support for TODs.

3.2 Transit Oriented Development

TODs are a form of Smart Growth that refers to a compact, mixed-use, pedestrian-oriented neighborhood surrounding or adjacent to a transit station. TODs often feature a variety of residential types (townhouses, rental units, condominiums, single-family homes) combined with retail, employment centers, public areas and other services. TODs typically have a radius of one-quarter to one-half mile (which represents the average distance a pedestrian can walk within five to ten minutes) to or from a rail or bus station that is surrounded by high-density development with lower density development gradually spreading outwards. By locating a mix of amenities and activities around transit stations, adjacent retail and residential space become more desirable



Source: Gruen Associates

Figure 4.8: Phase 2 Town Square Concept

Figure 3-1: Fontana Land Use Concept

through enhanced accessibility, and transit ridership increases as it becomes a viable and convenient mode of travel.

As shown in Figure 3-2, typical characteristics of a TOD within one-quarter to one-half mile of a station are:

- An attractively designed transit station with pedestrian amenities
- Diversity of uses such as residential, retail, office, entertainment and recreational facilities.
- Higher development intensity nearest to the transit station tapering off near the edges of TOD
- Public and civic spaces near stations
- Interconnected network of streets
- Pedestrian connections, such as continuous sidewalks and pedestrian paths to the station and throughout the development with features such as:
  - adequate sidewalk widths
  - decorative sidewalk and crosswalk treatments
  - appropriately sized street trees in tree wells at the curb
  - pedestrian-oriented signage
  - properly scaled street lighting
  - buildings and their entrances oriented toward the street
  - parking behind buildings
  - traffic calming measures in neighborhoods adjacent to the station
- Well-designed and managed parking, and a reduction in parking requirements near transit

Source: Gruen Associates, 2008.

Figure 3-2: TOD Characteristics

- A bicycle network and other non-motor vehicle modes connecting the transit station with other transit stops and the surrounding area
- Special attention focused on buildings designed to enhance the pedestrian environment

3.3 Regional Examples of TOD's

The following is a brief list of TODs that have been successfully implemented in Southern California:

Village Walk, Claremont, CA – Village Walk is a transit-oriented development located within an eight-minute walk of Metrolink's Claremont Station. It is also near Claremont Village, as well as the five Claremont Colleges. Completed in 2006, Phase I and II consist of 186 condominiums, lofts, town homes and duplexes. Village Walk is the main residential component of the City of Claremont's Village Expansion plan. The plan for the area includes the transformed lemon-packing house into the new Claremont Museum of Art, live/work lofts, restaurants, and shops. On the main street of Indian Hill Boulevard and the adjacent blocks, new shops, offices, restaurants, a boutique hotel, a five-screen movie theater, and a public parking structure with retail tenants, as well as a public plaza were constructed. (Source: City of Claremont website).

http://www.condominiums.com/california/Claremont/images/villagewalk_claremont.jpg

Mission Meridian Village, South Pasadena CA – The South Pasadena Metro Gold Line was designed to include a town square with pedestrian amenities and artwork. The Mission Meridian Village, adjacent to the Metro Gold Line in South Pasadena includes 67 condominiums, 5,000 square feet of retail space, two levels of subterranean parking containing 280 parking spaces, and a bicycle store and storage facility. It is located within two minutes of the Metro Gold Line Mission station and is designed in styles in keeping with the surrounding neighborhood. As a TOD, Mission Meridian Village has been a success. In 2006, it won both the AIA Honor Award for Multifamily Residential developments and Congress for New Urbanism Charter Award. This development and the station have stimulated other pedestrian-friendly compatible developments in the area. (Source: Gruen Associates and Moule and Polyzoides Architects).

Del Mar Station, Pasadena CA – Completed in 2007 in Pasadena on the Metro Gold Line, Del Mar Station is an intense, mixed-use development based on the concept of historic transit plazas of Europe. The four- to seven-story buildings, organized around a 1-acre plaza and the train station, have 347 apartment units and 11,000 square feet of retail use. (Source: The New Transit Town, Best Practices in Transit-Oriented Development).

The Stuart at Sierra Madre Villa Station, East Pasadena, CA – The 1999 East Pasadena Specific Plan encouraged TOD uses around the then proposed Gold Line light rail station at Sierra Madre Villa and provided development guidelines. The Stuart, located adjacent to the final stop of the Metro Gold Line on 7.5 acres of property, and completed in 2006, is the first phase of the TOD. Part of this 188-unit complex is the former Stuart Pharmaceutical plant and office building that was designed by architect Edward Durell Stone in 1958 and is listed in the U.S. National Register of Historic Places. The Stuart features a direct pathway to the Sierra Madre Gold Line station and park-and- ride, and preserves portion of the Stuart Pharmaceutical. The second phase of the project (still under review) will include an additional 322 units. (Source: Gruen Associates and Pasadena Star News).

http://bredebuts.typepad.com/photos/uncategorized/2008/06/17/barbara_2.jpg

Wilshire-Vermont Station Mixed-Use Project, Los Angeles, CA – Recently completed, the Wilshire-Vermont Station of the Metro Red Line includes a central courtyard (the entrance to the station is within the courtyard), approximately 400 rental units, 26,000 square feet of ground level retail, and 700 underground parking spaces. The Wilshire-Vermont Station was partially financed with Community

Redevelopment Agency (CRA) funds, and 20 percent of the rentals are affordable. A new middle school and childcare center are also located on this block. (Source: Los Angeles County Metropolitan Transportation Authority).

http://www.jamessuhrandassociates.com/WV-crp04.jpg

Hollywood & Vine, Hollywood, CA – Currently under construction and scheduled to be completed in 2009, this project is adjacent to the Hollywood/Vine Metro Red Line station. The project being developed jointly between Legacy Partners, Gatehouse Capital Corporation, and the Los Angeles Community Redevelopment Agency, will include a 12-story, 300-room Hotel, 61,500 square feet of retail and restaurant space, 150 for-sale condominiums, and 375 rental units, of which 20 percent will be affordable units on a 4.6 acre parcel. It is currently under consideration for certification by the U.S. Green Building Council as an environmentally, friendly development. (Source: Los Angeles Times).

http://mayor.lacity.org/labt/media/Hollywood_Vine_Project.jpg

Downtown Brea, CA – With the decline of old Downtown Brea, the City of Brea hosted a design charrette in 1989 to bring new life into downtown. What resulted from the charrette was a new downtown mixed-use district, which required the City acquisition of land. Built from scratch, the pedestrian friendly 60 acre entertainment/retail district consists of movie theaters, restaurants, and retail as well as a mixture of housing options with live/work apartments and townhomes. (Source: www.epa.gov)

3.4 Strategies for TOD Implementation & Example Policies

In developing the LRTP, SANBAG builds upon the unique assets of the individual communities that guide county-wide decision making. Successful TODs require a mix of supportive public policies. The local communities that benefit from transit must enhance their roles by developing and implementing policies that encourage higher density mixed use residential and commercial developments within walking distance of the transit nodes within their community. Implementation of TOD supportive policies entails collaboration and coordination between public and private entities. Therefore, considerations of incentive mechanisms aimed at both local

communities and developers will further help to achieve the goals of TOD.

SANBAG has identified strategies for TOD implementation, as well as examples of how effective TOD policies and strategies have been implemented in other cities. Local communities can use these examples to develop a policy framework that strengthens the relationship between land use and transportation in their city, and throughout the San Bernardino Valley.

Update General Plans/Prepare Specific Plans

California State Law requires cities and counties to adopt a comprehensive General Plan to guide its future development. General plans indicate the goals, priorities and future visions at a citywide level. Larger cities also frequently develop policy documents for the various geographic communities within it, called Specific Plans. Specific Plans are comprised of the land use elements of the General Plan, and provide more site-specific policy recommendations and detailed land use designations consistent with the goals and policies of the General Plan.

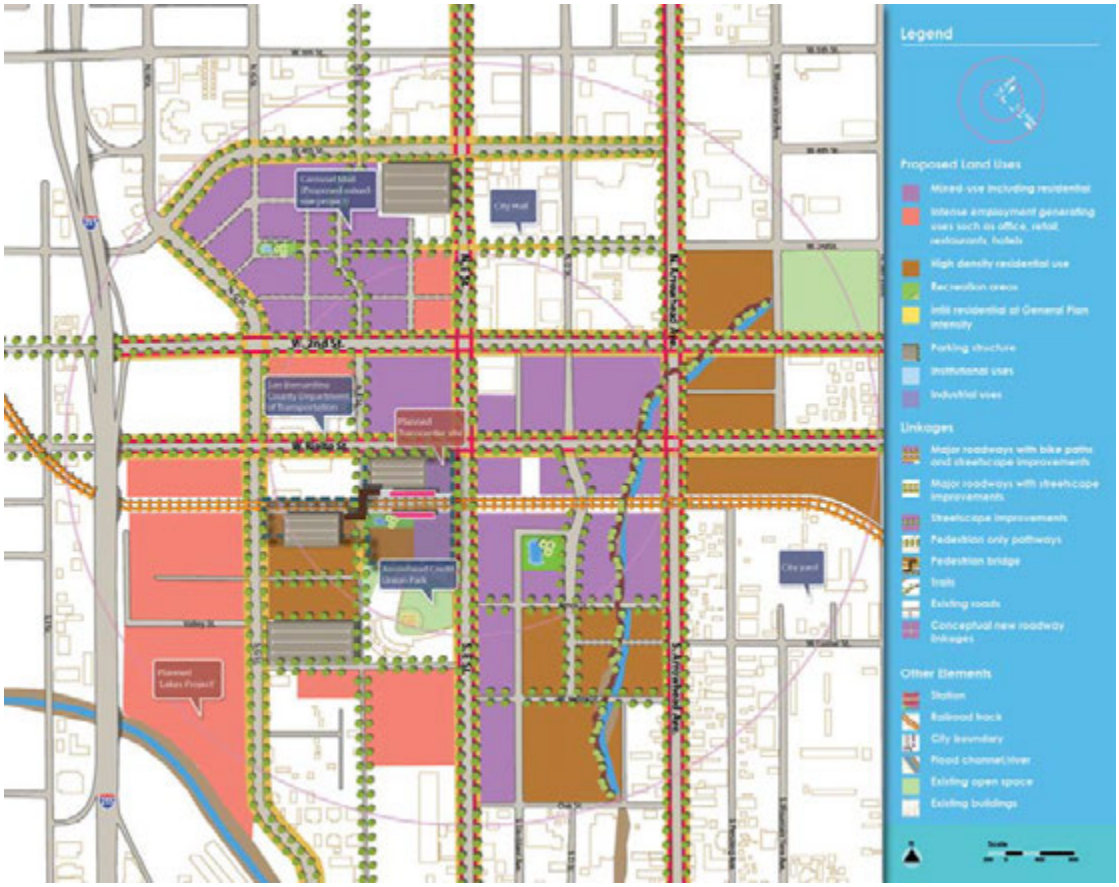
SANBAG encourages all local jurisdictions to update their general plans and prepare specific plans, if appropriate, for the corridors identified as TOD opportunity sites in order to designate the entitlements and incentives that support TOD.

There are many effective planning and regulatory mechanisms that communities can pursue to achieve successful TOD. Updates to general plans and the development of specific plans should include policies and strategies related to station area planning, urban design, parking management, zoning, and affordable housing. Below are just a few strategies and policy examples implemented by other cities.

Station Area Planning

SANBAG, in its participation with SCAG Compass Blueprint 2% Strategy Program and the Redlands Passenger Rail project, has taken the lead in developing Station Area Plans. SANBAG encourages local communities to review and streamline their project approval process to encourage development under the applicable Station Area Plan. Methods that have been used to streamline the Project Approvals process include the development of Memorandums of Understanding (MOU's) and Intergovernmental Agreements (IGA's).

Station Area Plans, as shown in Figure 3-3, are developed for both existing stations and future transit facilities. They allow communities to achieve the goals and visions outlined in their General Plans and Specific Plans by addressing elements that are unique to their station areas and surrounding neighborhoods. Station Area Plans establish development guidelines for the area within a half-mile radius of a transit station, including the amount of office, retail, housing, streets, sidewalks and parking. Components of Station Area Plans include market studies, land use plans, infrastructure and utility needs, redevelopment strategies, and regulatory recommendations and incentives that encourage TOD. It is during the station area planning process that urban design policies, parking management guidelines, zoning strategies and affordable housing goals are established.



Source: Gruen Associates, 2008.

Figure 3-3: Station Area Planning

Examples of Station Area Planning

Successful Station Area Planning processes involve a variety of planning efforts[7]:

Building Community Support

- In an effort to take a more proactive approach to station area planning, the City of Los Angeles is shifting its focus from planning for general station prototypes to developing neighborhood plans for each station area; this approach recognizes the value of creating specific plans for each individual station.
- Involving local businesses contributed to the ongoing successes at BART's Fruitvale station and along San Francisco's Third Street light rail line. When transit operators and local governments seek the neighborhood business community's participation, the potential for transit-oriented development coupled with neighborhood revitalization increases.

Integration with Other Planning Efforts

- In the San Francisco Bay Area, specific plans at the Hayward and Fruitvale BART stations have integrated new and old development, and the plans themselves have become integrated into other planning efforts. The Hayward station plan was part of the City's overall effort to revitalize its downtown. At Fruitvale,

[7] All examples have been taken from the document located here: http://www.seattle.gov/transportation/SAP/Background_Report_Profiles/chapter3.pdf

the station plan was integrated with the provision of vital housing and community services to local residents.

- In San Jose, a solid framework comprised of the General Plan, specific plans, and Housing Initiative policies support transit-oriented development. San Jose has been successful in implementing transit-supportive projects because of its policy base and the implementation of those policies.

Expedited permit review procedures to encourage TODs around station areas

- In the Bay Area, "umbrella" environmental review has shortened the review period around some BART stations for projects that conform to particular station area plans.

Work with Redevelopment agencies to promote private development in station areas

- In the City of San Francisco, MUNI staff sought to engage and cooperate with the San Francisco Redevelopment Agency in order to plan for appropriate land uses and catalyst projects. Muni's role in the process was to plan for and provide transit and enhancements, with the SFRA taking the lead on land use planning and providing other redevelopment incentives, such as land assembly. Both agencies worked cooperatively by hosting joint economic revitalization forums as part of the light rail planning process.

Locating public buildings at rail stations

- In Portland, Tri-Met encouraged the location of government office buildings and regional attractions at MAX stations. For example, the Rose Garden basketball arena and the Oregon Convention Center were both built at existing light rail stations and integrated with the transit system. In the western suburb of Hillsboro, a major justice center is located at the terminus of the Westside light rail line, and the design incorporates landscaping and wide sidewalks to facilitate access to the rail platform and make the station area more attractive for pedestrians. At the Old Town/Chinatown station in downtown Portland, the Oregon Department of Transportation relocated one of its offices to a location near the station several years ago, and the State of Oregon is constructing a new government office building.

Urban Design

Urban design plays an important role for the achievement of TODs. Urban design policies are used not only as aesthetic tools to enhance or maintain the image and identity of a city through built form, but also to direct growth and guide developments to create pedestrian and transit user friendly environments. The goal of urban design policies for TODs is to ensure a cohesive and compact urban form that is pedestrian friendly, attractive, and creates neighborhood connections to transit.

Examples of Urban Design Policies

The 2030 Sacramento General Plan (March, 2009) outlines policies that address both land use and urban design. Listed below are design policies from the 2030 Sacramento General Plan that relate to TODs:

- **LU 2.1.3 Complete and Well-structured Neighborhoods.** The City shall promote the design of complete and well-structured neighborhoods whose physical layout and land use mix promote walking to services, biking and transit use; foster community pride; enhance neighborhood identity; ensure public safety; are family-friendly and address the needs of those of all ages and abilities.

- **LU 5.** Urban Centers. Urban design policies for urban centers should include:
  - Convenient and attractive pedestrian connections from adjoining neighborhoods and transit;
  - Internal streets designed to integrate and balance safe pedestrian, bicycle, and transit use with efficient vehicular traffic flow; and
  - Street design integrating safe pedestrian, bicycle, transit and vehicular use and incorporates traffic-calming features and on-street parking;
- **LU 6.1.10.** Corridor Transit. The City shall encourage design and development along mixed-use corridors that promotes the use of public transit and pedestrian and bicycle travel and maximizes personal safety through development features such as:
  - Safe and convenient access for pedestrians between buildings and transit stops, parking areas, and other buildings and facilities; and
  - Roads designed for automobile use, efficient transit service as well as pedestrian and bicycle travel.
- **LU 7.1.4 Urban Design.** The City shall require that new and renovated employment center development is designed to accommodate safe and convenient walking, biking, and transit use, and provide attractive, high-quality "campus environment," characterized by the following:
  - A highly inter-connected system of streets and walkable blocks;
  - Buildings sited around common plazas, courtyards, walkways, and open spaces;
  - Extensive on-site landscaping that emphasizes special, features such as entryways, and screens parking lots and service areas;
  - A coordinated and well-designed signage program for tenant identification and way finding;
  - Attractive streetscapes and lighting to promote pedestrian activity;
  - Clearly-marked entrance drives, pedestrian routes, and building entries that minimize potential conflict between service vehicles, private automobiles, and pedestrians; and
  - Facilities and services such as child care, cafes, and convenience retail that address employee needs.

Parking Management Strategies

Parking management strategies result in more efficient use of parking resources that when implemented, reduce automobile use; reduce the amount of land required for parking facilities; and increases infill affordability. Parking is an essential component to the planning process of creating TODs. Reduced parking requirements along with parking management strategies and policies must work hand-in-hand in order to make TODs successful.

Currently, most of the cities in the San Bernardino Valley have land values that support surface parking. For example, many of the cities have land use policies with high parking requirements which is a reflection of the current auto-dependant and suburban nature of development. High parking

requirements have been shown to significantly increase the cost of development and lower the density which may actually decrease the value of property in some areas. Reductions in parking requirements for land uses are an important and critical ingredient of TOD.

Today, when designing mixed-use developments or transit projects, structured parking is often necessary to achieve compact development at reasonable densities and to accommodate parking requirements. Parking infrastructure contributes substantially to the cost of a project. A March 2006 *Exposition Line Infill Development Potential Analysis* by Solimar found that parking reductions play a more important role in making a project economically feasible than density bonuses.

According to *Statewide Transit-Oriented Development Study, Special Report Parking and TOD: Challenges and Opportunities* prepared in February 2002 for the California Department of Transportation, a TOD can potentially reduce parking per household by approximately 20% compared to non transit oriented land uses. It also states "a wide range of parking reductions (from 12% to 60%) has been found for commercial parking in TODs." However, this document also states that there is no clear conclusion and parking reductions should be considered on a case-by-case basis. As a general rule, parking requirements serving the uses of a TOD should be lower than that of conventional development. The report also states that "a reasonable supply of parking for those who need or want to drive is required to sustain development viability. Moreover, insufficient park-and-ride parking at a TOD, without compensatory park-and-ride spaces elsewhere, can reduce transit ridership by limiting the auto access ridership component."

There are many opportunities to implement parking management strategies that reduce the demand as well as the need for parking in a TOD.

- Parking Requirements: For developments constructed near planned future transit, allow an increase in density on the site without an increase in parking requirements. Although a transit system is not yet built, parking reductions should be considered due to the mix of uses near transit. This provides the option of sharing parking between daytime/nighttime and weekend/weekday demands, and better utilizes existing available parking in the immediate vicinity.
- Parking Benefit Districts: A concept advocated by UCLA Urban Planning Professor Donald Shoup, a parking benefit district is an area where metered parking revenue is earmarked directly for the community to pay for public services or improvements. An example of this in practice is Old Pasadena where 690 parking meters resulted in $1.2 million in net revenue to fund additional public services. The application of this policy directly contributed to the successful redevelopment of Old Pasadena, making it one of the more successful shopping and entertainment areas in the Los Angeles region.
- Parking Meters: There are various parking meter strategies that have benefits for TODs. San Francisco is experimenting with meters that allow for variable pricing as well as payment options. Where meter prices can be adjusted based on demand, it becomes feasible to increase the price of a curbed space depending on how long a car is parked. For example, charging higher fees after the first hour of parking. Allowing for various payment methods is

another parking meter strategy, where the convenience of paying by credit card, debit card or cell phone may increase the chance that users will pay a higher fee for parking. Similarly, San Francisco's Translink card, a system currently being used as a universal fare card across multiple regional systems, is being tested to serve as a single card for both parking and transit fares.

Examples of Parking Management Policies

The City of San Diego General Plan (March 2008) proposes broad policies that create a platform for more detailed parking solutions to be developed in community-based specific plans. Listed below are the broad policies in the City of San Diego General Plan in which each specific plan should conform to:

- **ME-G.1.** Provide and manage parking so that it is reasonably available when and where it is needed.
  - Where parking deficiencies exist, prepare parking master plans to inventory existing parking (public and private), identify appropriate solutions, and plan needed improvements.
  - Implement strategies to address community parking problems using a mix of parking supply, management, and demand solutions.
  - Optimize parking prices to reflect equilibrium between supply and demand. Consider the positive and negative implications of parking pricing when developing solutions to parking problems.
- **ME-G.2.** Implement innovative and up-to-date parking regulations that address the vehicular and bicycle parking needs generated by development.
  - Adjust parking rates for development projects to take into consideration access to existing and funded transit with a base mid-day service frequency of ten to fifteen minutes, affordable housing parking needs, shared parking opportunities for mixed-use development, provision of on-site car sharing vehicles and parking spaces and implementation of TDM plans.
  - Strive to reduce the amount of land devoted to parking through measures such as parking structures, shared parking, mixed-use developments, and managed public parking (see also ME-G.3), while still providing appropriate levels of parking.
- **ME-G.3.** Manage parking spaces in the public rights-of-way to meet public need and improve investment of parking management revenue to benefit areas with most significant parking impacts.
  - Continue and expand the use of Community Parking Districts (CPD). The CPDs can be formed by communities to implement plans and activities designed to alleviate parking impacts specific to the community's needs. The CPDs also improve the allocation and investment of parking management revenue by providing the Community Parking Districts with a portion of the revenue generated within their boundaries for the direct benefit of the district.
  - Implement parking management tools that optimize on-street parking turnover, where appropriate.
  - Judiciously limit or prohibit on street parking where needed to improve

safety, or to implement multi-modal facilities such as bikeways, transit ways, and parkways.

- **ME-G.4.** Support innovative programs and strategies that help to reduce the space required for, and the demand for parking.
- **ME-G.5.** Implement parking strategies that are designed to help reduce the number and length of automobile trips. Reduced automobile trips would lessen traffic and air quality impacts, including greenhouse gas emissions.

Los Angeles County has implemented parking policies that directly correspond to surrounding transit:

- Allows 40% parking reduction for new residential development, and 60% reduction for some commercial and civic activities in TOD districts established around the Metro Blue Line stations at Slauson, Florence, Firestone and Imperial.

City of Los Angeles

- Allows 15% parking reduction within 1,500 feet of Metro Rail Red Line.

Zoning

Zoning regulates land-uses, lot sizes, densities, heights, setback and parking within a zone district. Traditional zoning assigns specific areas of a community one of several zones identified in a community's zoning code and tends to focus on the segregation of land uses. Traditional zoning does not address the qualitative features of development such as building orientation, pedestrian spaces, and public realm.

Changes in zoning or the implementation of zoning strategies, particularly in the vicinity of existing and future transit stations, are essential for encouraging TODs. There are various zoning strategies that permit a mix of land-uses and dwelling types to co-exist within a zoning district. The most critical elements of zoning strategies for TODs include increased density, reduced parking requirements, mixed-uses, as well as pedestrian and bicycle access to transit. The objective of zoning for TODs is to link a variety of land uses nearby transit stations that generate transit demand, and to facilitate the design of well-connected and vibrant pedestrian environments between these land uses and transit stations.

Examples of Zoning Strategies

An Overlay Zone is a separate zoning district with regulations tailored to address a specific topic or issue within a specific area, which is overlayed over the current zoning district. An overlay zone is typically more restrictive than the underlying zoning, and in the case of a conflict with the existing code, the more restrictive requirement will apply. TOD goals can be met with this regulatory approach because overlay zones can address the specific context of an area and ensure that the land uses, densities, and site designs that support TOD principles.

- San Diego created an Urban Village Overlay Zone which has been used to create a mix of land uses. The intent of this overlay is to develop at higher densities than is currently allowed in the current zoning districts, and to provide various height and density bonuses for projects located within close proximity to an existing or planned light rail transit station.
- The City of Mountain View created a Transit Overlay Zone to help guide neighborhood development to be well integrated with a new light rail station. The City requires developers to implement higher density development

and various design features that foster a pedestrian-oriented environment, and restrict auto-oriented uses within the Transit Zone.

Where overlay zones address specific goals and issues, Plan Districts are tailored to meet the needs of a specific geographic area when other zoning mechanisms cannot accomplish the desired results. They are designed to work with the existing zoning regulations, and are used to modify zoning for areas defined in plans and studies, for example, an area identified as a future transit corridor, redevelopment site, or a TOD development site.

- Oakland applied a new zoning classification that was created specifically for the BART Fruitvale Station area. The TOD District classification encourages a balance of commercial, civic, and residential uses and was used as a catalyst for community revitalization and redevelopment of a declining commercial strip.

Affordable Housing[8]

Americans spend over half of their incomes on housing and transportation. Lower-income families spend as much as 30 percent of their total annual income on transportation costs alone which are driven by the cost of owning and operating a vehicle, and by land uses that are dispersed and difficult to access. By placing housing in proximity to public transportation, TODs provide the opportunity to lower the combined cost of housing and transportation. Affordable housing located near transit allows families and seniors to access employment, education, retail, and community opportunities, and reduce their reliance on automobiles. Not only does reduced household spending on transportation result in more affordable housing, but the increased density required for TODs increases the opportunities to build and include affordable housing in TOD projects.

Studies show that the desire to live near transit is increasing dramatically in recent years, where by 2030; it is forecasted that 16 million households will want to live near transit[9]. The market demand for housing within close proximity to public transit, job markets, and amenities will cause housing prices to climb, and higher property values may make the building of affordable housing seem financially infeasible to developers. For this reason, policy tools are necessary to ensure the development, availability, and preservation of affordable housing in TOD projects.

Affordable Housing Development Strategies

To encourage the development and preservation of affordable housing in TODs, both financing strategies and policy incentives are beneficial:

Federal Housing Tax Credits is a major form of financing affordable housing. The federal government distributes housing tax credits to each state, and each state then allocates these credits to low-income housing developers. The State of California incorporates additional criteria to the federal requirements to evaluate potential projects. In order to encourage affordable housing close to transit, points are based on proximity to transit, frequency of transit service, and density. BART's Castro Valley

[8] TCRP report 102 TOD's in the US.

[9] Center for Transit Oriented Development, "Preserving and Promoting Diverse Transit-Oriented Neighborhoods," http://www.cnt.org/repository/diverseTOD_FullReport.pdf, p. 2.

Station used federal housing tax credits to help finance the construction for the affordable housing provided for both low-income families and seniors.

Affordable Housing Financing Strategies

Obtaining financing is one of the biggest challenges for low-income households to afford housing. Various financing strategies are being used to expand homeownership opportunities:

- A common approach for making homeownership affordable is to offer silent second mortgage programs, which provide secondary home loans to low- or moderate-income homebuyers to supplement a primary mortgage. The loan is silent because repayment of the principal or interest doesn't occur until the home is resold or refinanced, allowing the funds to be recycled to assist other homebuyers. The recycling of public dollars allows this funding to serve more families each year.

Another approach for making homeownership affordable is to offer Location Efficient Mortgages (LEM). LEM's allow people to qualify for larger loan amounts for homes in densely populated and transit-rich communities. Those living in compact communities drive less, own fewer cars, and therefore spend less on transportation costs and have a greater expendable income. The borrowing capacity of homebuyers' increases with LEM's by allowing for a greater housing-to-income ratio. This adds buying power to the budgets of low-income families who are shopping for homes, and gives them strong incentive to purchase in neighborhoods with TODs

Inclusionary zoning is a voluntary program where cities can require developers to include a specified number of affordable housing units as part of a residential development. Inclusionary housing practices can help to reduce commutes and encourage TODs by addressing housing supply in proximity to job markets and amenities. Inclusionary zoning practices are often implemented in conjunction with incentives to offset the financial impact of producing below-market housing.

Density bonuses for projects that provide certain levels of affordable or senior housing are common and effective incentives that allow for the production of more units than typically permitted under the jurisdictions zoning. Density bonuses not only provide incentive for affordable housing, but they encourage higher density construction which is vital to reducing sprawl, encouraging transit, and promoting the development of TOD projects.

California State law requires that a city or county must grant a density bonus or other incentive when a developer sets aside a minimum of 10% of its development for lower income households. A developer is allotted a 20% density bonus, and the law allows for a 1.5% increase for every 1% above the minimum 10% set aside for lower income housing, with a maximum density bonus of 35%.

A developer is entitled to density bonuses for providing condominium units for families of moderate income as well. Moderate income families are defined as "persons and families whose income does not exceed 120 percent of area median income." A density bonus of 5% is available to developers who set aside a minimum 10% of the total dwelling units in the condominium project for moderate income families. For every percentage increase above the 10% minimum, an additional 1% density bonus will be provided, with a maximum density bonus of 35%.

A developer is also entitled to a density bonus for constructing housing for senior citizens. Senior citizen housing is defined as "a residential development developed, substantially rehabilitated, or substantially renovated for, senior citizens that has at least 35 dwelling units." A density bonus of 20% is available to developers that set aside a minimum of 35 dwelling units for senior citizens.

On a local level, counties can implement other development incentives that further encourage the development of affordable housing for TOD projects. The Density Bonus program in Sonoma County, for example, provides developers of affordable housing with a density bonus as well as one other incentive such as a 20 percent reduction in the local open space requirements, reductions in parking requirements, minimum lot size and width requirements, and setback requirements.

The City of Los Angeles' has also implemented incentives in the form of reductions in the amount of parking required for affordable housing projects. Parking reductions are based on the number of affordable housing units, and also on the distance of the development from a transit station or bus route.

Density Thresholds & Pass/Fail Criteria

The book, "*The New Transit Town: Best Practices in Transit-Oriented Development,"* describes the best practices in TODs. This source states that there are no absolute densities for a TOD and some of the case studies presented have densities ranging from 10 to 100 units per acre. Table 3-1 shows the estimated densities of some of the examples of TODs discussed previously.

At densities of around six to seven households per acre transit use begins to increase and vehicle trips begin a corresponding decline. At about 50 households per acre, the number of trips taken daily by vehicles, transit, and walking become about the same. The Urban Land Institute has developed the following minimum densities for Supporting Transit, shown in Table 3-2.

Table 3-1: Examples of TOD Densities

Project	Estimated Density (DU/acre)
Mission Meridian, South Pasadena	40
Del Mar Station, Pasadena	100
The Stuart, Pasadena	25
Fruitvale Village, Oakland	22
Wilshire/Vermont Station, Los Angeles	129
Hollywood & Vine (+ Legacy Apts.), Los Angeles	122
Mandela Gateway, Oakland	36
Museum Place, Portland	333
Orenco Station, Portland	11
Village Walk, Claremont	23

Source: Gruen Associates

Table 3-2: ULI's Minimum Densities for Supporting Transit

MINIMUM DENSITIES FOR SUPPORTING TRANSIT

	Local Bus, Intermediate Service[1]	Local Bus, Frequent Service[2]	Light Rail[3]	Transit[4]
Dwelling units per acre	7	15	9	12
Residents per acre	18	38	23	30
Employees per acre	20	75	125+	N.A.[5]

Note: The density of the employment destination is more important in influencing trips than the density of the residential area where the trips originate.

1. Average density; varies as a function of downtown size and distance to downtown.
2. Average density over a two-square-mile tributary area.
3. Average density for a corridor of 25 to 100 square miles; transit to downtowns of 20 to 30 million square feet of nonresidential space.
4. Average density for a corridor of 100 to 150 square miles; transit to downtowns of more than 50 million square feet of nonresidential space.
5. Not available.

Sources: For residential densities, Boris Pushkarev and Jeffrey Zupan, *Public Transportation and Land Use Policy* (Bloomington and London: Indiana University Press, 1977). For employment densities, Reid Ewing, "Transit Oriented Development in the Sunbelt," *Transportation Research Record* 1552 (Transportation Research Board, National Research Council, Washington, D.C., 1996). L.D. Frank and Gary Pivo, *The Relationship between Land Use and Travel Behavior in the Puget Sound Region* (Olympia: Washington State Department of Transportation, 1994).

Source: Urban Land Institute, 2003.

What is important to note is that higher densities and compact developments indirectly lead to higher transit ridership and less automobile use. In mixed use, high density developments, the origins and destinations of any given trip are physically closer. In other words, goods and services are closer together, resulting in shorter travel distances and less vehicle miles traveled (VMT). Studies have shown that employment densities at trip-destinations have a greater influence on ridership than do land-use mix and population densities at trip origins.[10] It is therefore critical to increase development densities and locate employment opportunities near transit in order to ensure high TOD ridership.

A person living in a mixed use, high density development would likely opt for a mode of transit other than an automobile and instead use bus, rail, bicycle, or walk. Less VMT means that there are fewer cars on the road, which reduces energy consumption, decreases air pollution, and lowers traffic congestion. A forthcoming study for Transit Cooperative Research Program *Ensuring Full Potential Ridership from Transit-Oriented Development (TCRP H-27A)* by PB Place Making, Dr Robert Cervero, The Urban Land Institute and the Center for Transit Oriented Development, shows that, on average, TOD housing produces 50% fewer automobile trips in the four urbanized areas (Philadelphia/N.E. New Jersey; Portland, Oregon; metropolitan Washington D.C.; and the East Bay of the San Francisco Bay Area).

Many cities around the United States are looking to TOD's to protect natural resources and sensitive environmental areas, including mature established neighborhoods. Growth management areas and protection zones are often considered complementary policies and often used in conjunction with TOD's to

[10] Cervero, Robert. 2008. Effects of TOD on Housing Parking and Travel. TCRP Report 128. August 1, 2008.

strengthen the focus of growth near transit and sustainable neighborhoods.

Another benefit of increased density is the reduced costs associated with the building of infrastructure (sewer, water, highway, and utility lines). It stands to reason that if housing, jobs, and other associated activities are closer together, then fewer roads, sewers, and utility lines are needed to serve the area.

Table 3-3 illustrates TOD principles and potential benefits of TODs.

In order to best address the multiple goals of TOD, development thresholds or Pass/Fail Standards can be implemented to ensure that TOD development is successful. Corridor–level housing thresholds can be set even before Station Area Plans are developed to quantify the appropriate minimum level of development around transit stations along new corridors. Thresholds can be set by transit type, and do not need to reflect urban style-growth along the entire transit corridor, station areas deemed unsuitable for development by local communities can be accommodated at other stations. If existing development does not meet the corridor thresholds then station area plans can be developed to raise the level of development to reach the corridor threshold. The Metropolitan Transportation Commission (MTC) has released an interim evaluation of their TOD policy that clearly shows that corridor thresholds can be a successful implementation tool to accommodate future growth.

Table 3-4 shows corridor housing unit thresholds averaged by station area for project types in the MTC Jurisdiction. Table 3-5 shows performance of TOD's in other regions.

MTC notes that employment densities have the potential to be effective in developing corridor thresholds or as a mean to gain credit to meeting housing thresholds, however significant challenges exist in enacting employment thresholds including:

- Employment works best in generating transit ridership if job centers are concentrated at hubs as opposed to being spread along a corridor. Large central business districts are usually critical destinations, and corridor thresholds may encourage the dispersal of employment sites.
- Overall demand for office space varies by corridor and needs to be related to market demand.
- In outlying areas, residential achievable densities are generally much higher than achievable densities for employment.
- Cross-commuting to outlying employment areas may have a limited effect on transit ridership without strong parking management.
- Local jurisdictions already have many reasons to zone for employment, such as sales tax revenue, whereas affordable housing is usually not promoted.
- Housing units are easier to define and measure than employment uses, which rely heavily on assumptions such as the type of tenant and the number of workers expected to occupy the building.

Table 3-3: TOD Principles and Benefits

TOD Principles	Benefits
▪ TODs occupy land within ¼ mile to ½ mile radius around a rail or bus station, or within 125 to 500 acres. ▪ Typically, TOD areas are composed of three elements: o station area with platforms, and transit and passenger amenities, o core area within a five-minute walk of the station or about a 1/4 mile of the station, and the most intense employment, residential, and retail uses as well as convenience commercial for passengers, and o a neighboring ring within a ten-minute walk of station or about 1/4 to 1/2 mile of the station containing residential, commercial and other uses. ▪ A TOD must be a walkable, pedestrian-oriented area with amenities such as street trees, benches, crosswalks, decorative paving, and public art. Direct connections between different land uses should be provided. ▪ TODs have connectivity to the regional transit system and bicycle/trail and shuttle links to the area outside the ½-mile area ▪ Plans, policies and zoning provisions relating to mix of uses and building setbacks, and providing incentives such as density bonuses, floor area ratio increases, reduction of parking requirements, etc. play a significant role in facilitating a TOD.	▪ Environmental o Improved air quality and energy consumption: Decreased auto trips lead to lower emissions which results in improved air quality. o Increased transit ridership and decreased congestion: By decreasing driving, TODs result in reduced congestion. o Conservation of land and open space: TODs are compact developments, and therefore, consume less land than lower-intensity, auto-oriented development ▪ Economic o Catalyst for economic development: TODs can act as a catalyst for nearby properties to invest in their development as well. o Redevelopment: TODs can be used to redevelop vacant or underutilized properties and declining urban neighborhoods. o Increased property value: TODs can be used to revitalize the area within ¼ mile of the station. o Decrease infrastructure costs: TODs help in the reduction of infrastructure costs due to compact and infill development. o Revenue for transit systems: Increased ridership leads to additional revenues for transit systems. o Reduced household spending: By reducing gasoline costs, TODs contribute to a reduction in household spending on transportation. ▪ Social o Increased housing and employment choices: TODs provide a diversity of housing and employment types within close proximity to the transit station. o Greater mobility choices: By creating activity nodes linked by transit, TODs increase mobility options in congested areas. Young people, the elderly, those without cars and those not wanting to drive also have mobility. o Health benefits: By providing more opportunities

TOD Principles	Benefits
	for walking and bicycling, TODs offer health benefits. ○ Enhanced sense of community: By bringing more people and businesses closer, and creating an activity hub, TODs enhance the sense of community. ○ Enhanced public safety. By creating more active places used throughout the day and night providing "eyes on the street", TODs help increase safety. ○ Quality of life – by reducing the driving time for long automobile commutes, people can recapture this wasted time or other activities.

Sources: Statewide Transit-Oriented Development Study; Gruen Associates

Table 3-4: MTC's Housing Threshold by transit Mode

Project Type	BART	Light Rail	Bus Rapid Transit	Commuter Rail	Ferry
Housing Threshold	3,850	3,300	2,750	2,200	750

Source: Metropolitan Transportation Commission, 2006

Table 3-5: Performance of TOD's in other regions

System	Average Housing Units/Station	MTC's Equivalent TOD Policy Threshold	% Difference from TOD Policy Threshold
New Jersey - Hudson Bergen light Rail	7,063	3,300	+114%
New Jersey - Transit Villages	3,558	2,200-3,850*	+39%
Chicago - Evanston	4,192	2,200	+91%
Arlington County - Rosslyn Ballston Corridor	5,022	38,50	+30%
California - Various Examples	3,113	2,200-3,850*	-4%

*Varies depending on station

Source: Metropolitan Transportation Commission, 2006

Pass/Fail standards can be developed as an implementation tool to determine if the existing policy framework exists to support successful TOD's. Standards can include the development of milestones that must be reached at certain points in the project approval process. Two examples of applicable policies are: local communities must adopt transit-friendly zoning before construction can proceed; or parking and affordable-housing requirements must be developed before station area plans are approved.

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Chapter 4 Travel Demand Forecasting and Future Conditions

4.1 Travel Demand Forecasting Methodology

This section summarizes the methodology used and the validation of the San Bernardino Valley Focus Model (SBVFM) that was used to produce travel forecasts for the Long Range Transit Plan. This information is intended to demonstrate the model's ability to replicate existing transportation and transit ridership behavior, and the utility of the model for forecasting future ridership and comparing transit alternatives in San Bernardino County.

This document provides a summary of the development and derivation of the SBVFM from the SCAG regional model, followed by a summary of the model validation effort specifically required for the analysis of transit services in the San Bernardino Valley. The regional nature of the remainder of the model (outside of the San Bernardino Valley) also allows for future transit analysis of the remainder of San Bernardino County, to a sketch planning lower level of accuracy.

The forecasting tool employed for the Long Range Transit Plan is the San Bernardino Valley Focus Model, which is a focused model derived from the Southern California Association of Governments (SCAG) regional model. The SCAG model was updated in conjunction with the 2008 Regional Transportation Plan (RTP), using a Year 2003 validation year. Elements of the SCAG regional mode are documented in 2003 SCAG Model Validation and Summary – Regional Transportation Model (January 2008).

The San Bernardino Valley Focus Model uses the basic structure of the SCAG model, with the mode choice model customized for use in the San Bernardino Valley, and an increased level of definition based on the networks and zone systems found in the San Bernardino Valley.

The SBVFM employs the traditional 4-step modeling process used in the SCAG model. Special features of the SBVFM include:

- All person trips are modeled (including non-motorized)
- Auto-ownership is tied to transit accessibility
- Person trip data is split into peak and off-peak trips before application of distribution models
- Feed-back loops are used for highway and transit skims
- Log-sums are used to estimate composite impedance for application within trip distribution models for home-based work trip purpose
- Vehicle trip data is split into four time periods and converted to origin-destination format using time-of-day models
- Transit trip data is assigned to peak (AM) and off-peak (midday) time periods in production-attraction format

Zone System

The SBVFM uses a zone system comprising 3,056 transportation analysis zones (TAZs) in the SCAG region. The development of the SBVFM zone system was accomplished in two steps. First, 259 TAZs in the two regional statistical areas (RSAs) that comprise the San Bernardino Valley area were split into 1,811

TAZs, using zone boundaries defined in other local models used in the San Bernardino Valley. Then, the SCAG TAZs in remote areas of Ventura, Los Angeles, Orange, Riverside, and Imperial Counties were aggregated to coarser levels of detail, reducing the number of zones outside of San Bernardino County by 2,605. The net result was to decrease the number of zones in the SCAG region from 4,109 to 3,056. Table 4-1 displays a comparison of the number of TAZs in each of the six SCAG counties, plus the other centroids, in the SCAG zone system and in the SBVFM zone system.

Table 4-1: Transportation Analysis Zones in SCAG Counties

County	SCAG TAZs	SBVFM TAZs
Ventura	210	6
Los Angeles	2,243	541
Orange	666	225
Riverside	475	320
San Bernardino	701	1,954
Imperial	110	6
Total	4,109	3,056

Source: Hexagon, 2009.

Socioeconomic Data

The SBVFM uses the same socioeconomic input data used in the SCAG model, except that the data has been aggregated or split to fit into the SBVFM zone system. Key socioeconomic data used in the SBVFM include the following variables:

- Total population
- Resident population
- Workers
- Single-family households
- Multiple family households
- K-12 school enrollment
- College/university enrollment
- Retail employment
- Service employment
- Basic employment
- Median household income

Trip Purposes

Trips made for different purposes have been found to have different characteristics, such as average trip lengths and mode shares. Therefore, separate models are used to estimate the different trip purposes. The most popular trip purposes used in travel demand models are home-based work, home-based other, and non-home based.

The SBVFM uses the same 13 trip purposes that are used in the SCAG models. These include six home-based work trip purposes, five home-based other trip purposes, and two non-home based trip purposes. These trip purposes are summarized below.

- Home-based work-direct
  - Low income (<$25,000)
  - Middle income ($25,000 - $49,999)
  - High income ($50,000 or more)
- Home-based work-strategic
  - Low income
  - Middle income
  - High income
- Home-based elementary & high school
- Home-based college & university
- Home-based shopping
- Home-based social-recreational
- Home-based other
- Work-based other
- Other-based other

Trip Generation

Trip generation is the process of estimating how many person trips are generated within each TAZ. The trip generation procedures used in the SBVFM are identical to the procedures used in the SCAG model. Trip generation models estimate both productions (the home end of trips) and attractions (the non-home end of trips).

Finally, the productions and attractions are "balanced" so that the regional totals match for each trip purpose.

Trip productions are estimated for each TAZ using a cross-classification procedure. First, the households in each TAZ are stratified into household categories. For example, for home-based work trips the households are stratified into a matrix of household categories based on the number of persons in the household, the number of workers in the household, and the income level of the household. The cross-classification variables for the work and non-work trip purposes are summarized below.

- Home-based work & work-based other (3-way cross classification)
  - 6 household size groups (1, 2, 3, 4, 5, 6+)
  - 4 workers per household groups (0, 1, 2, 3+)
  - 3 income level groups (low, middle, high)
- Home-based non-work & other-based other (2-way cross classification)
  - 6 household size groups (1, 2, 3, 4, 5, 6+)
  - 5 auto ownership level groups (0, 1, 2, 3, 4+)

After households have been stratified, trip production rates are applied to each household category, and the resulting trips are aggregated in each TAZ for use in subsequent models. Trip attractions are estimated by a set of linear equations that convert households, employees, and school enrollment to trip attractions.

Transportation Networks

The SBVFM uses an integrated transportation network that includes mixed-flow and exclusive facilities for highway, truck and transit modes. The network structure is similar to the structure developed for the SCAG models, with some refinements designed to ease the analysis of trips that may be influenced by the transportation alternatives in the detailed analysis, such as a refined coding of access to transit stations.

Highway Networks

The SBVFM uses separate networks for four different time periods:

- AM Peak - 6 to 9 AM
- Midday - 9 AM to 3 PM
- PM Peak - 3 to 7 PM
- Nighttime - 7 PM to 6 AM

The primary difference between the four networks is the highway capacity, which is a function of the number of hours of duration of each time period.

The links in the networks are coded with each of the modes that are available. The available highway modes include mixed flow links, shared ride HOV links (two or more persons), carpool HOV links (three or more persons), toll links, and truck links for three classes of heavy vehicles.

The highway networks are comprised of nodes and links that connect centroids that represent the 3,056 TAZs in the SCAG region. The Year 2007 highway network also includes 40 external stations that represent highway connections to areas outside of the SCAG region, 12 airports, 40 port zones, and 150 park-and-ride stations that allow the model to simulate travel between the highway network and the integrated transit network.

The highway network comprises over 100,000 directional highway links. Each link is characterized by several attributes, including seven area types, ten facility classes, number of travel lanes, the link capacity, free-flow speed, and observed

speed. The latter three attributes are estimated for each link with the use of lookup tables, based on the area type, facility type, number of lanes and other link variables.

The highway network includes attributes and modes that identify toll facilities and truck facilities. Toll facilities in the region are currently restricted to Orange County. Link attributes defining truck facilities serve two purposes. First, they allow the user to restrict or prohibit the use of links by certain classes of heavy duty trucks. Second, they allow the model assignment algorithm to assign truck trips separately from other modes, which allows the user to convert truck trips to Passenger Car Equivalents (PCEs).

Transit Networks

The SBVFM includes two transit networks integrated with the AM Peak period and Midday period highway networks. The AM Peak transit network is used to assign and model transit trips made in the peak periods, and the Midday transit network is used to assign and model transit trips made in the off-peak periods.

The transit networks are integrated with the highway networks so that mixed flow links can carry both highway and transit modes, and exclusive links can carry various transit modes. The transit networks also include auxiliary transit links that allow trips to access transit services and to transfer between transit routes. In all, the SBVFM transit networks include 13 transit modes and eight auxiliary transit modes.

The transit networks include transit lines that are characterized by itineraries, stop locations, and headways. The AM Peak transit network includes over 1,500 transit lines in the region, including 30 Omnitrans routes, three Metrolink routes, and two other operators serving the San Bernardino Valley.

Highway and Transit Skims

One of the main objectives of the highway and transit networks is to allow an accurate and comparative representation of the travel times and costs between centroids by various modes of travel. The travel times and costs estimated by the model are commonly referred to as skims. The highway and transit skims are used as input to both the trip distribution and mode choice models.

Highway skims for both the peak and off-peak time periods are based on the travel time on the shortest time paths. The highway operating speeds are estimated using equilibrium assignment algorithms that adjust the operating speeds on the links as a function of the demand-capacity ratio for the link. In model application, the highway skims are based on feedback speeds resulting from three iterations of the four-step modeling procedure. The in-vehicle highway travel times are augmented with terminal times associated with the locations of the trip ends. The SBVFM calculates separate highway skims for both HOV trips and drive alone trips (which are restricted from using HOV links).

Transit skims comprise a combination of variables that have been found to affect both the choice of the transit mode and the path choice for transit options. The variables include the in-vehicle transit travel time, access time between centroids and transit stops, wait time, number of transfers, and transit fare. The in-vehicle travel times are estimated using different procedures for transit routes using mixed-flow and exclusive facilities. For transit routes that operate on links that are coded as mixed flow facilities, the transit operating speeds are estimated as a function of the highway operating speed.

For exclusive transit links, the operating speeds are derived from published schedules. The SBVFM calculates separate transit skims for four sets of transit paths for both walk-access and drive-access paths. The four sets of transit paths are distinguished by the transit modes that are allowed for the trip, as follows:

- The *local bus* paths allow only transit modes defined as local;
- The *premium express bus* paths can use transit modes described as either local or express bus;
- The *premium LRT/BRT* paths can use any transit mode described as bus, light-rail transit or subway transit; and
- The *commuter rail* paths can use any transit mode.

Trip Distribution

The SBVFM trip distribution models use a gravity model to distribute trips. These models use the same procedures and gamma function friction factors similar to those developed for the SCAG trip distribution models. However, the gamma function coefficients are recalibrated specifically for use in the SBVFM.

The input data to the trip distribution models include productions and attractions output from the trip generation models, and impedance data from highway and transit skims. Three different types of travel impedance are used for different types of trip distribution models. The six home-based work trip purposes use composite impedance log-sums, which also serve as the denominator in the mode choice equations. The composite impedance log-sums for the medium income and high income households include all travel modes, while the composite impedance log-sums for the low income households exclude drive alone skims from the log-sum calculation. The other seven trip purposes use impedances derived exclusively from highway travel times.

The distribution process creates 26 person trip tables, including both peak period and off-peak period trip tables for each of the 13 trip purposes estimated by the trip generation models. Following application of the trip distribution models, the 26 resulting trip tables are aggregated to 14 person trip tables, as summarized below in Table 4-2.

Mode Choice

The SBVFM mode choice model uses the basic structure developed for the OCTAM mode choice model. However the modal bias constants have been recalibrated specifically for use in the SBVFM.

The mode choice model application is performed separately for the peak and off-peak time periods for five trip purposes (home-based work, home-based school, home-based other, work-based other, and other-based other).

Different model constants are used for households in the three income classes for home-based work and home-based other trips. The home-based work stratification of households by income class is output from the trip distribution models. The home-based other stratification of households by income class is estimated for each TAZ as a constant share of the total person trips.

The TAZ data is split into three walk access markets - short walk, long walk, and no transit - based on a GIS analysis of the relationship between the zone boundaries and the transit stop locations.

Table 4-2: Trip Purposes from Trip Generation and Trip Distribution Models

Exhibit 3: Trip Purposes from Trip Generation and Trip Distribution Models

Trip Generation Models (26 Tables)	Trip Distribution Models (14 Tables)
Peak Period Home-Based Work Direct - Low Income	Peak Period Home-Based Work - Low Income
Peak Period Home-Based Work Strategic - Low Income	
Peak Period Home-Based Work Direct - Medium Income	Peak Period Home-Based Work - Medium Income
Peak Period Home-Based Work Strategic - Medium Income	
Peak Period College/University	
Peak Period Home-Based Work Direct - High Income	Peak Period Home-Based Work - High Income
Peak Period Home-Based Work Strategic - High Income	
Peak Period School (K-12)	Peak Period School (K-12)
Peak Period Home-Based Shopping	Peak Period Home-Based Other
Peak Period Home-Based Social-Recreational	
Peak Period Home-Based Other	
Peak Period Work-Based Other	Peak Period Work-Based Other
Peak Period Other-Based Other	Peak Period Other-Based Other
Off-Peak Period Home-Based Work Direct - Low Income	Off-Peak Period Home-Based Work - Low Income
Off-Peak Period Home-Based Work Strategic - Low Income	
Off-Peak Period Home-Based Work Direct - Medium Income	Off-Peak Period Home-Based Work - Medium Income
Off-Peak Period Home-Based Work Strategic - Medium Income	
Off-Peak Period College/University	
Off-Peak Period Home-Based Work Direct - High Income	Off-Peak Period Home-Based Work - High Income
Off-Peak Period Home-Based Work Strategic - High Income	
Off-Peak Period School (K-12)	Off-Peak Period School (K-12)
Off-Peak Period Home-Based Shopping	Off-Peak Period Home-Based Other
Off-Peak Period Home-Based Social-Recreational	
Off-Peak Period Home-Based Other	
Off-Peak Period Work-Based Other	Off-Peak Period Work-Based Other
Off-Peak Period Other-Based Other	Off-Peak Period Other-Based Other

Source: Hexagon, 2009.

The regional modal bias constants were adjusted to match observed modal shares derived from regional household survey data. The modal bias constants were further refined for San Bernardino County to match data from transit boarding counts collected for Omnitrans and Metrolink in the Year 2006.

Time-of-Day and Assignment Procedures

The procedures from the preceding three steps (trip generation, trip distribution, and mode choice) are used to create vehicle and transit trip tables in production-attraction format for peak and off-peak trips for five trip purposes.

The time-of-day factors are used to convert the vehicle trip tables from production-attraction format to origin-destination format for the four time periods (AM Peak, Midday, PM Peak, and Nighttime). The resulting vehicle trip tables are then assigned to the highway networks using a multi-class assignment procedure for three auto modes (drive alone, two-person, and three-or-more person) and three truck modes (light-heavy vehicle, medium-heavy vehicle, and heavy-heavy vehicle).

The transit trip tables are assigned in production-attraction format to the AM Peak transit network (peak transit trips) and the midday transit network (off-peak transit trips). The transit trips are assigned separately to the four sets of transit paths before the assignment results are aggregated together.

Additional Model Development and Validation Tools

Additional tools used to complete this model validation include the following.

- *SCAG 2008 Regional Transportation Plan* (RTP), and *SCAG 2008 Regional Transportation Improvement Program* (RTIP) are used to validate the background highway and transit networks for the Base Year (2007) conditions.
- *Omnitrans Short Range Transit Plan, 2008-2013, Final Report* (July 2007) is used to validate the model's ability to replicate transit ridership on individual transit routes.
- *San Bernardino Associated Governments Profile of Transit Riders in San Bernardino County – Final Report* (March 2007) is used to validate the model's ability to replicate characteristics of transit riders served by Omnitrans bus routes and Metrolink rail routes.
- Omnitrans On-board Survey data (2006) is used to validate the model's ability to replicate transit trips and origin-destination data in the San Bernardino Valley.

Omnitrans on/off count data, collected in 2006, is used to validate activity at bus stops in the San Bernardino Valley.

4.2 Travel Demand Model Validation

The model validation process is presented sequentially from the coarser level to the finer level of analysis as follows:

- Regional model validation
- San Bernardino Valley/Omnitrans system-wide validation
- San Bernardino Valley study area and bus route segments
- Origin-destination of trips in study area

Regional Validation

The regional transportation system in the SBVFM is virtually identical to the transportation system in the parent SCAG Regional Model, except in the San Bernardino Valley. The SCAG model was validated to Year 2003 conditions. Validation of this model is documented in 2003 SCAG Model Validation and Summary – Regional Transportation Model (January 2008).

The San Bernardino Valley Focus Model (SBVFM) is a focus model derived from the most recent update of the SCAG Regional Model, with the mode choice component of the model derived from the OCTA Model. First developed in 2004, the SBVFM has been used in several projects in the San Bernardino Valley. The SBVFM was developed specifically to satisfy FTA guidelines for transit modes for New Starts projects. The SBVFM was applied successfully to complete the Alternatives Analysis phase of the E Street Corridor Project, and to bring that project into the Project Development phase.

For purposes of this model validation, the SBVFM was updated to base year 2006/2007 conditions. This base year update includes:

- SE data interpolated between 2003 and 2010 data;
- Highway network updated to reflect freeway projects throughout the region;
- Transit networks updated to reflect regional rail and rapid bus services;
- Highway network updated to reflect highway improvements in the San Bernardino Valley; and

- Transit networks updated to reflect Omnitrans bus services.

Several regional validation issues arose from the conversion of the SCAG regional model to the San Bernardino Valley Focus Model. The most important was related to the trip distribution and mode choice models. Each of these issues were identified and addressed to maintain validation of the regional application of the models to the focus model.

The key issue with the trip distribution model arose as a result of the disaggregation of zones within the San Bernardino Valley focus area. The finer zone structure within the focus area resulted in many more opportunities for short trips than within the SCAG regional model. Since the trip distribution element of the regional model had been calibrated with relatively few short trips (less than six minutes in highway travel time) there was limited data with which to calibrate the gravity models for the shorter trip lengths.

Meanwhile, the focus model has a significant number of possible trips of the shorter trip lengths to consider. When the regional trip distribution model was applied within the context of the focus model, the result was that far more very short trips than desired. In order to correct this problem it was necessary to recalibrate the friction factors for the short trip lengths. The result of this effort produced trip distributions and trip tables that were consistent with the results of the regional model validation. Separate recalibration efforts were completed for home-based work trips for three income groups, plus seven other trip purposes, each in two time periods.

The key issue with the mode choice model was the ratio of transit boardings to linked transit trips, resulting from the average number of transfers assigned to each transit trip. To correct this problem the coefficients for second wait (transfer wait) were adjusted from 2.0 times first wait to 3.0 times first wait. This adjustment was applied to all travel modes for both the path-builder and mode choice model to maintain consistency within the models.

Other elements of the models were not adversely affected by the transition from the regional model to the focus model, and did not require additional adjustment. These elements include the trip generation model and highway algorithms.

San Bernardino Valley/Omnitrans Bus System

The primary providers of transit service in the San Bernardino Valley are Omnitrans, which operates 29 local bus routes and one express bus route, and Metrolink, which provides regional commuter rail service between downtown Los Angeles and several suburban areas, including the San Bernardino Valley.

For purposes of this model validation, the San Bernardino Valley portion of the SBVFM was updated from the Year 2003 conditions reflected in the SCAG model validation to Year 2006/2007 conditions. This update includes highway improvements in the San Bernardino Valley and local bus service updates. Since the on-board transit survey was conducted in 2006, the validation transit network replicates the local bus routes as they existed in 2006.

Several validation issues were encountered during validation of the mode choice models at the San Bernardino Valley level of detail. The issues requiring the most significant effort to achieve model validation include issues with trip purpose and the assignment results on bus routes with low-frequency vs. high-frequency service.

The original application of the regional models within the context of the San Bernardino Valley Focus Model resulted in a lower percentage of work and school trips on Omnitrans bus routes than were observed during the Omnitrans on-board bus survey. This problem was corrected by applying distinct adjustments to the transit bias constant within the mode choice models for each of the five trip purposes.

The transit assignments resulting from the original application of the focus model resulted in a system-wide under-assignment of transit trips on high-frequency transit routes (less than 30-minute headways) and over-assignment of transit trips on low-frequency transit routes (60-minute headways). The original version of the path-builders used in the model included a cap on wait time equivalent to a 30-minute headway. This cap was adjusted to a 60-minute headway and the relative assignments on low-frequency vs. high-frequency services improved.

Other important elements of the model were not adversely affected by the transition from the regional model to the focus model, and did not require additional adjustment. These elements include the wealth variable and the relative shares of ridership on local and premium transit modes. The transit travel time functions required only a very minor adjustment to calibrate travel times to bus schedules.

The total boardings on each of the local bus routes operated by Omnitrans are summarized in Table 4-3. This table shows that the daily assignments for most of the transit routes are within +/- 900 daily boardings, or within +/- 30% of the daily ridership, and the root mean statistically error (RMSE) for the transit routes is 0.262.

Relative shares of local bus trips in the San Bernardino Valley made for five trip purposes are summarized in Table 4-4. The results shown in this table are expected since the transit bias constants for the San Bernardino Valley were calibrated to match the distribution of transit trips by trip purpose.

The Year 2006 Omnitrans on-board bus survey reports that 53 percent of Omnitrans riders are from households with annual incomes of less than $20,000. The SBVFM accurately reflects this fact, with the mode choice models creating 54 percent of its transit trips from lower income households.

4.3 Year 2035 Population and Employment Forecasts

The population of the San Bernardino Valley is expected to grow to over 2 million people in the Year 2035, which is 37 percent higher than the Year 2006 population. Table 4-5 displays population and employment growth data for the year 2035 for San Bernardino Valley cities.

The City of San Bernardino, which is currently the largest city in the valley, is expected to grow by 30 percent to a population of over 265,000. The city of Ontario is expected to experience the greatest population growth, with a year 2035 population estimate of over 337,000.

Employment in the San Bernardino Valley is expected to grow to over 928,000 in the Year 2035, which is 62 percent higher than the Year 2006 employment. The cities of Ontario, San Bernardino, and Rancho Cucamonga are expected to maintain their current positions as the three cities with the highest employment in the valley. Figures 4-1 and 4-2 show the forecasts for Employment and Population Densities for Year 2035, respectively.

Table 4-3: Omnitrans Ridership Validation by Route

Route Number	Type of Route	Headway	Ridership Observed	Estimated	Difference	Ratio
1	East Valley Local	15	3,462	4,064	602	1.17
2	East Valley Local	15	4,113	4,441	328	1.08
3	East Valley Local	20	2,821	2,313	(508)	0.82
4	East Valley Local	20	2,876	2,212	(664)	0.77
5	East Valley Local	30	1,820	1,409	(412)	0.77
7	East Valley Local	30	1,030	1,414	384	1.37
8	East Valley Local	60	828	1,237	409	1.49
9	East Valley Local	60	1,041	1,208	167	1.16
10	East Valley Local	30	1,278	1,574	296	1.23
11	East Valley Local	30	1,272	895	(377)	0.70
14	East Valley Local	15	3,968	3,154	(814)	0.79
15	East Valley Local	30	2,591	3,444	853	1.33
19	East Valley Local	30	2,627	2,992	365	1.14
20	East Valley Local	30	635	209	(426)	0.33
22	East Valley Local	20	2,000	1,672	(328)	0.84
28	East Valley Local	60	150	120	(30)	0.80
29	East Valley Local	60	209	113	(96)	0.54
31	East Valley Local	60	94	299	205	3.19
60	West Valley Local	60	723	655	(68)	0.91
61	West Valley Local	15	5,349	4,620	(729)	0.86
62	West Valley Local	30	1,370	1,758	388	1.28
63	West Valley Local	30	1,203	908	(295)	0.76
65	West Valley Local	30	1,094	1,132	38	1.03
66	West Valley Local	15	3,072	2,970	(102)	0.97
67	West Valley Local	60	702	587	(115)	0.84
68	West Valley Local	30	1,373	1,926	553	1.40
70	West Valley Local	60	348	326	(22)	0.94
71	West Valley Local	60	807	881	74	1.09
75	West Valley Local	60	107	144	37	1.34
90	Express	45	1,225	979	(246)	0.80
Total			50,189	49,656	(533)	0.99

Source: Hexagon, 2009.

Table 4-4: Omnitrans Ridership by Trip Purpose

Trip Purpose	Actual	Target
Home-based Work	34%	34%
Home-based Other	34%	34%
Work-based Other	7%	7%
Home-based School	16%	16%
Other-based Other	9%	9%

Source: Hexagon, 2009

Table 4-5: Year 2035 Population and Employment Growth Data - San Bernardino Valley Cities

City	Year 2035 Data			Growth - 2006-2035		
	Population	Households	Employment	Population	Households	Employment
Chino	112,038	28,800	64,869	43%	52%	36%
Chino Hills	82,880	24,848	14,720	6%	12%	64%
Colton	89,604	27,851	53,412	69%	82%	123%
Fontana	224,011	57,784	70,782	36%	40%	55%
Grand Terrace	14,911	5,324	5,866	19%	24%	91%
Highland	72,497	21,911	16,492	39%	47%	167%
Loma Linda	41,385	17,286	33,086	84%	105%	97%
Montclair	54,643	15,032	24,434	50%	64%	53%
Ontario	337,095	91,936	187,671	94%	103%	69%
Rancho Cucamonga	172,420	55,181	97,874	3%	8%	59%
Redlands	93,196	34,316	51,206	31%	36%	31%
Rialto	143,308	39,736	46,581	42%	55%	105%
San Bernardino	265,515	78,619	157,088	30%	35%	61%
Upland	82,444	31,716	30,888	11%	25%	15%
Yucaipa	63,357	24,033	18,006	25%	36%	87%
Unincorporated	160,987	43,290	55,838	29%	33%	58%
San Bernardino Valley Total	2,010,291	597,663	928,813	37%	44%	62%

Source: SCAG, 2009.

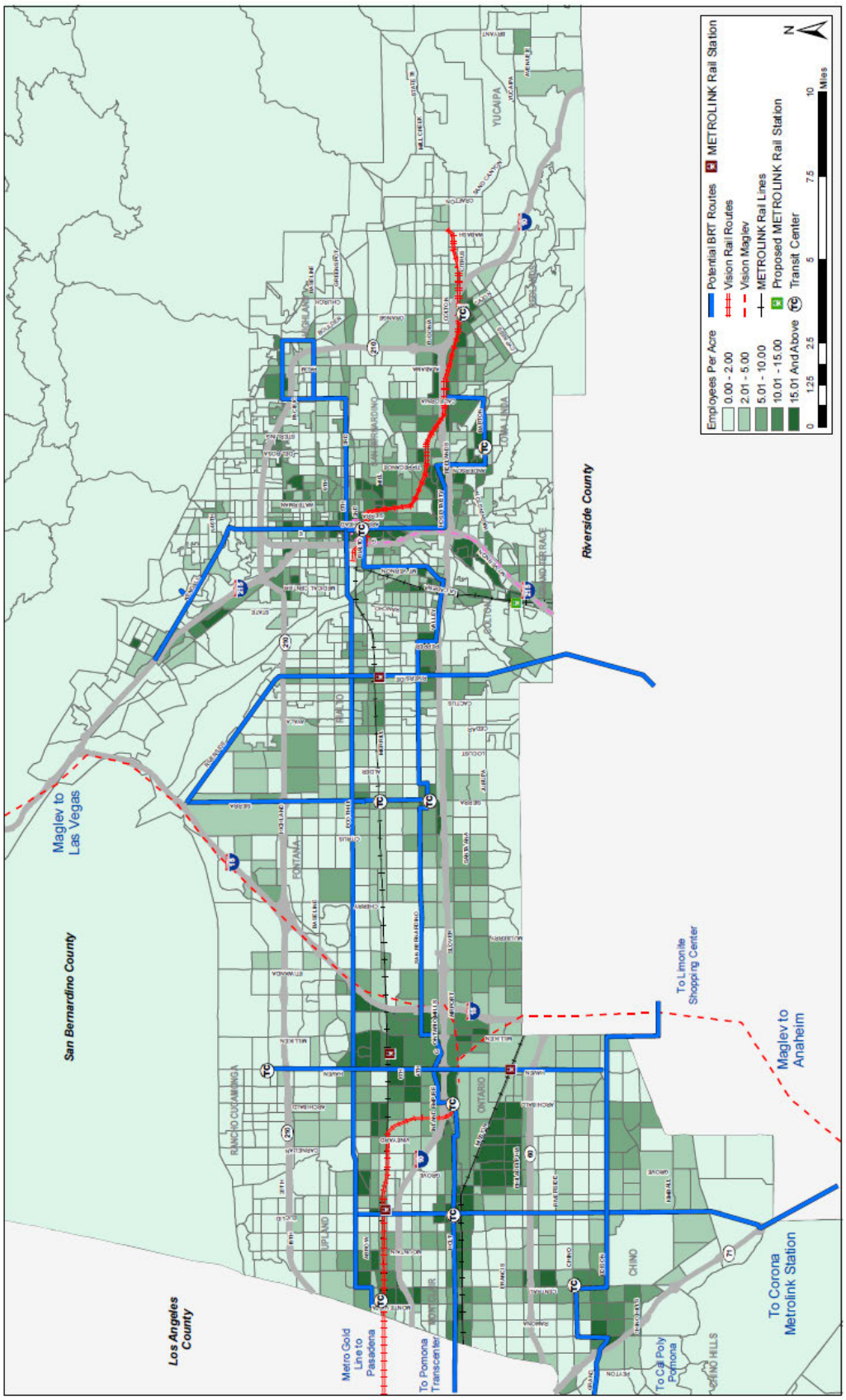
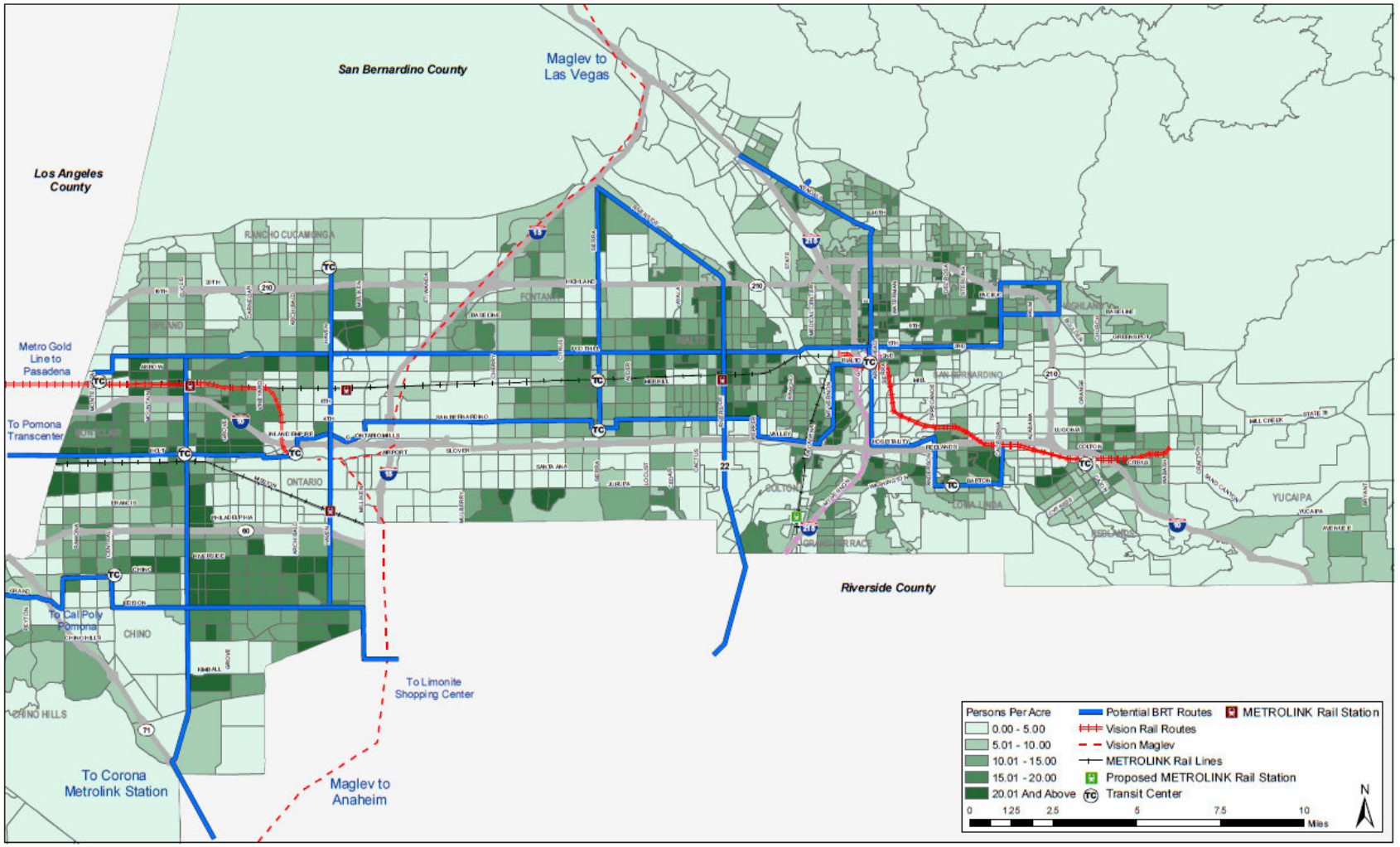


Figure 4-1: VISION Employment Density Year 2035

Source: Parsons, 2009.



VISION Population Density Year 2035

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 4-2: VISION Population Density Year 2035

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CHAPTER 5 DEVELOPMENT OF ALTERNATIVES

This chapter first presents descriptions of existing regional transit plans and planning projects that are under study. These plans form the basis for the four future transit alternatives that are analyzed in the Long Range Transit Plan. The reason for studying the different alternatives is to be able to assess the ridership benefits of different levels of transit investment in the San Bernardino Valley. The four future transit alternatives include:

- The Baseline Alternative, shown in Figure 5-1 which includes existing transit services;
- The Plan Alternative, shown in Figure 5-2 which includes an increase in coverage and service frequency designed to serve the future growth in the region;
- The Vision Alternative, shown in Figure 5-3, which includes an investment in a higher level of transit services – BRT and rail – in the region; and
- The Sustainable Land Use Alternative, shown in Figure 5-4 which redistributes population and employment growth to transit corridors, allowing us to study the potential ridership benefits of public policy efforts to shape the transit/land use connection in the region.

Based on the April 26, 2006 workshop at SANBAG, five LRTP Conceptual Alternatives for the San Bernardino Valley were carried forward for initial analysis and presentation to the general public. In conjunction with the Compass Blueprint 2% Strategy and in preparation for SB 375 it became desirable to revise the transit alternatives to combine three "vision alternatives" into one transit alternative and prepare a Sustainable Land Use Alternative. Table 5-1 compares mass transit Service Assumptions for each alternative.

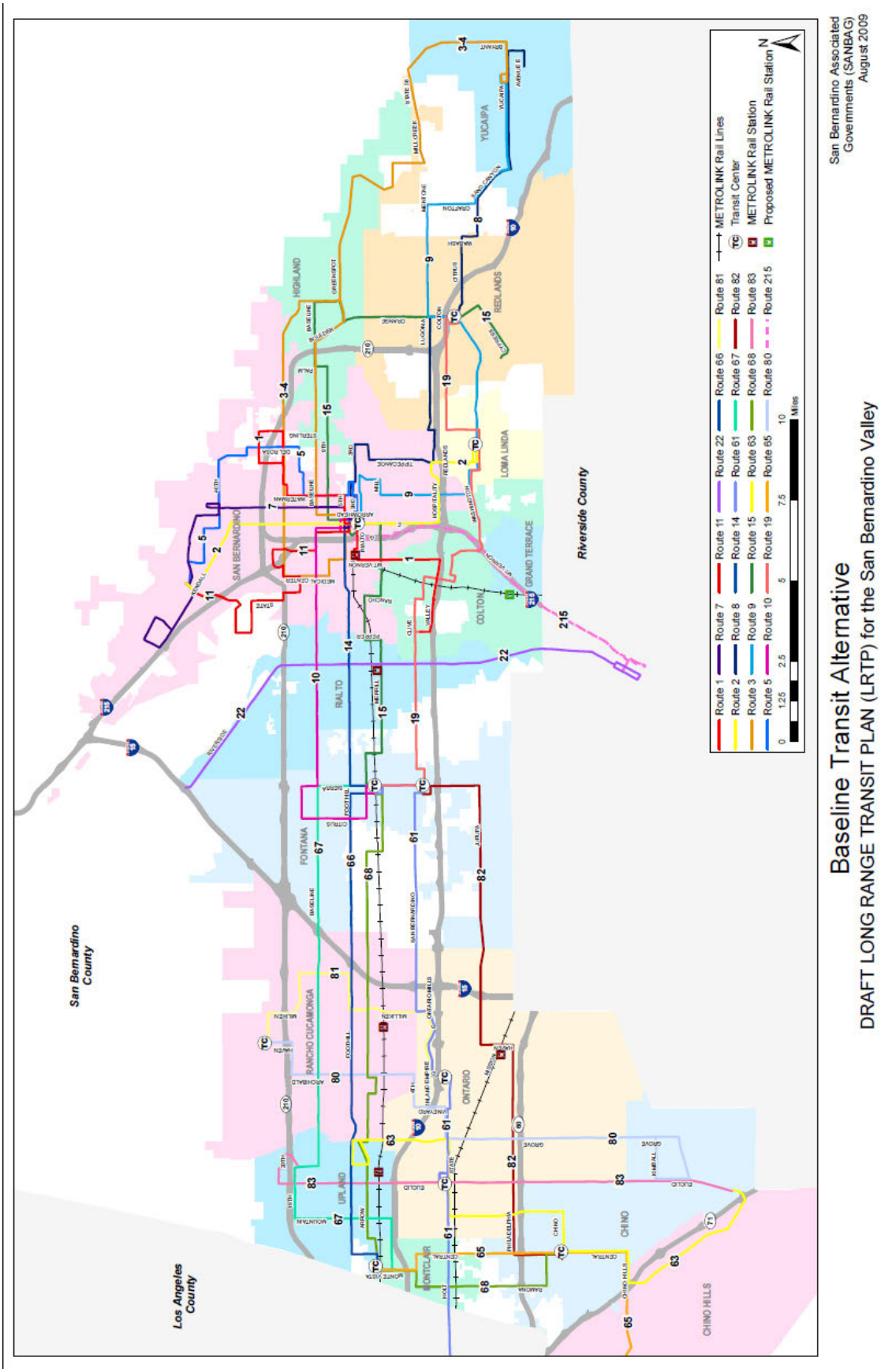
5.1 REGIONAL PLANS

The LRTP is an integral part of the regional planning process and serves in conjunction with the following plans:

SYSTEM-WIDE TRANSIT CORRIDOR PLAN

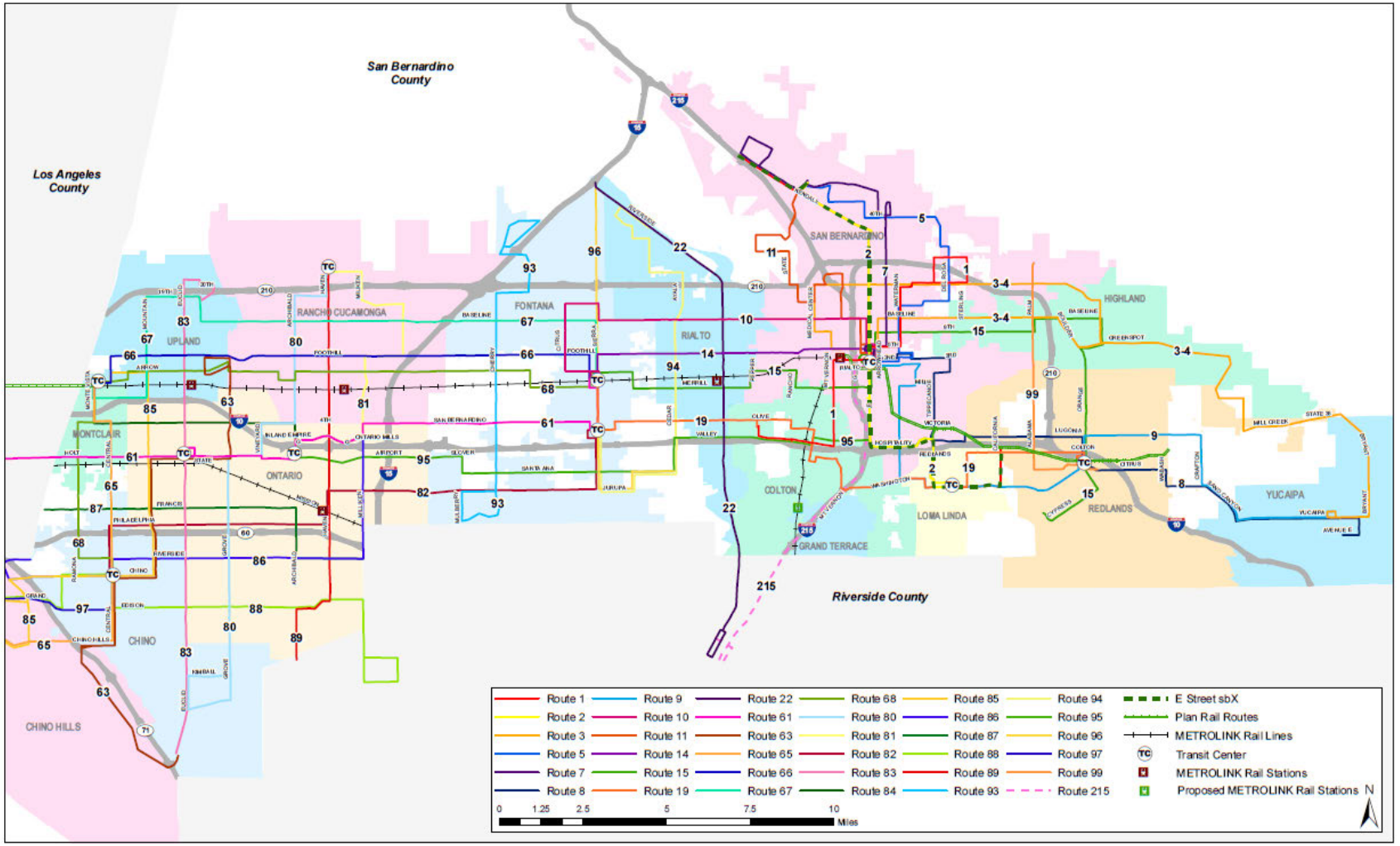
The 2004 System-wide Transit Corridor Plan developed for Omnitrans identified seven key transit corridors, shown in Figure 5-5 for the San Bernardino Valley to introduce higher quality transit service (higher frequency, express or BRT services) known as the sbX, to attract choice riders and effect a positive transit mode shift. Major transit corridors include: Corridor 1 (E Street); Corridor 2 (Foothill East); Corridor 3 (Foothill West); Corridor 4 (Mountain & Euclid); Corridor 5 (San Bernardino Avenue); Corridor 6 (Holt & Fourth Street); and Corridor 7 (Grand & Edison). Three additional corridors have been identified for study, including: Corridor 8 (Sierra Avenue); Corridor 9 (Riverside Avenue); and Corridor 10 (Haven Avenue).

Corridor 1, Shown in Figure 5-6 was identified as the highest priority corridor and has progressed into the Project Development Process with planned operation of the E Street sbX in 2012. The remaining corridors form the framework for the establishment of a base fixed route network, with the possible introduction of limited stop or full express services as a precursor to sbX network expansion. All ten of these corridors will be the subject of an update to the System-wide Transit Corridor Plan, which is due to be completed later in 2009.



Source: Parsons, 2009.

Figure 5-1: The Baseline Alternative



Plan Transit Alternative

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 5-2: The Plan Alternative

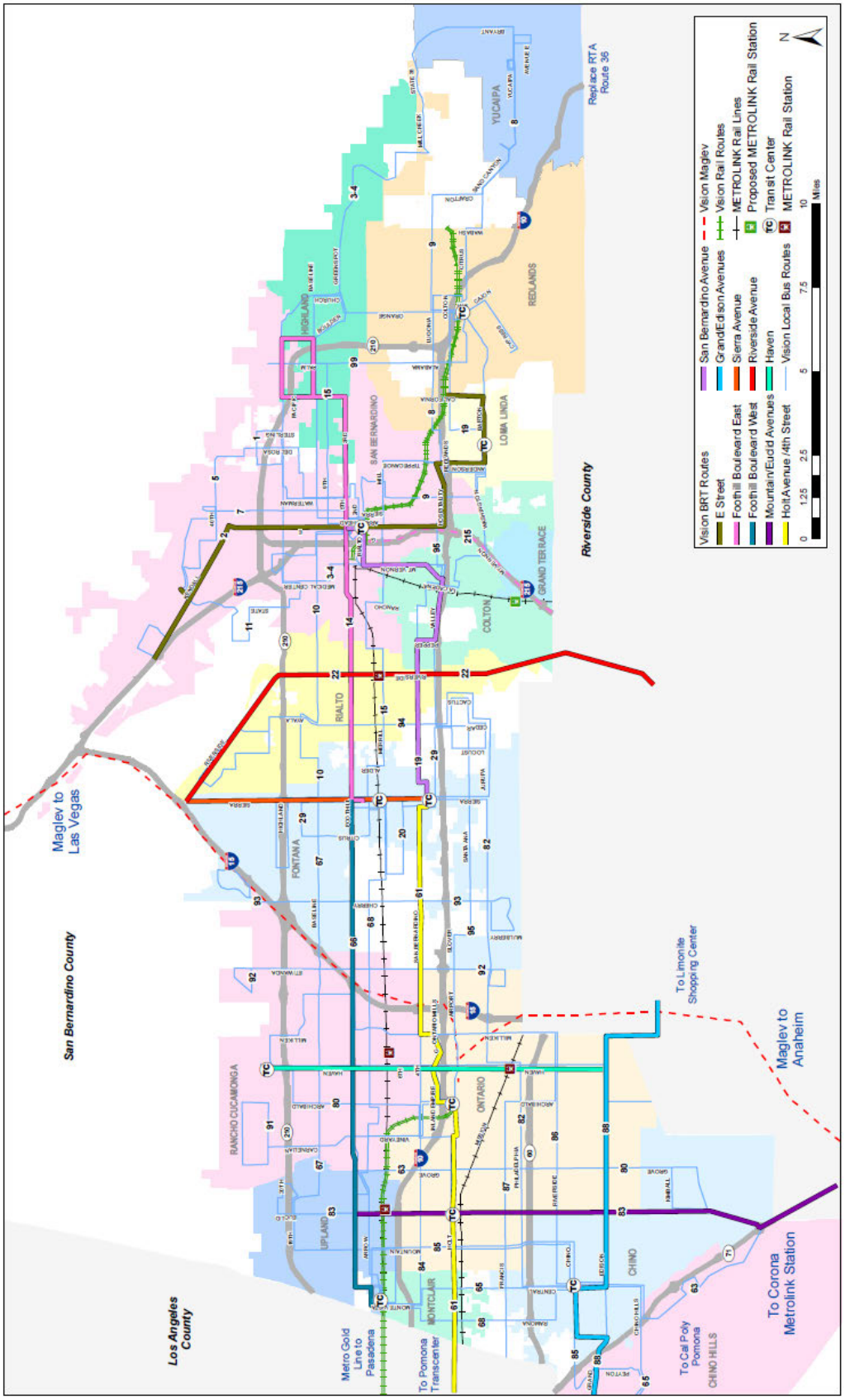
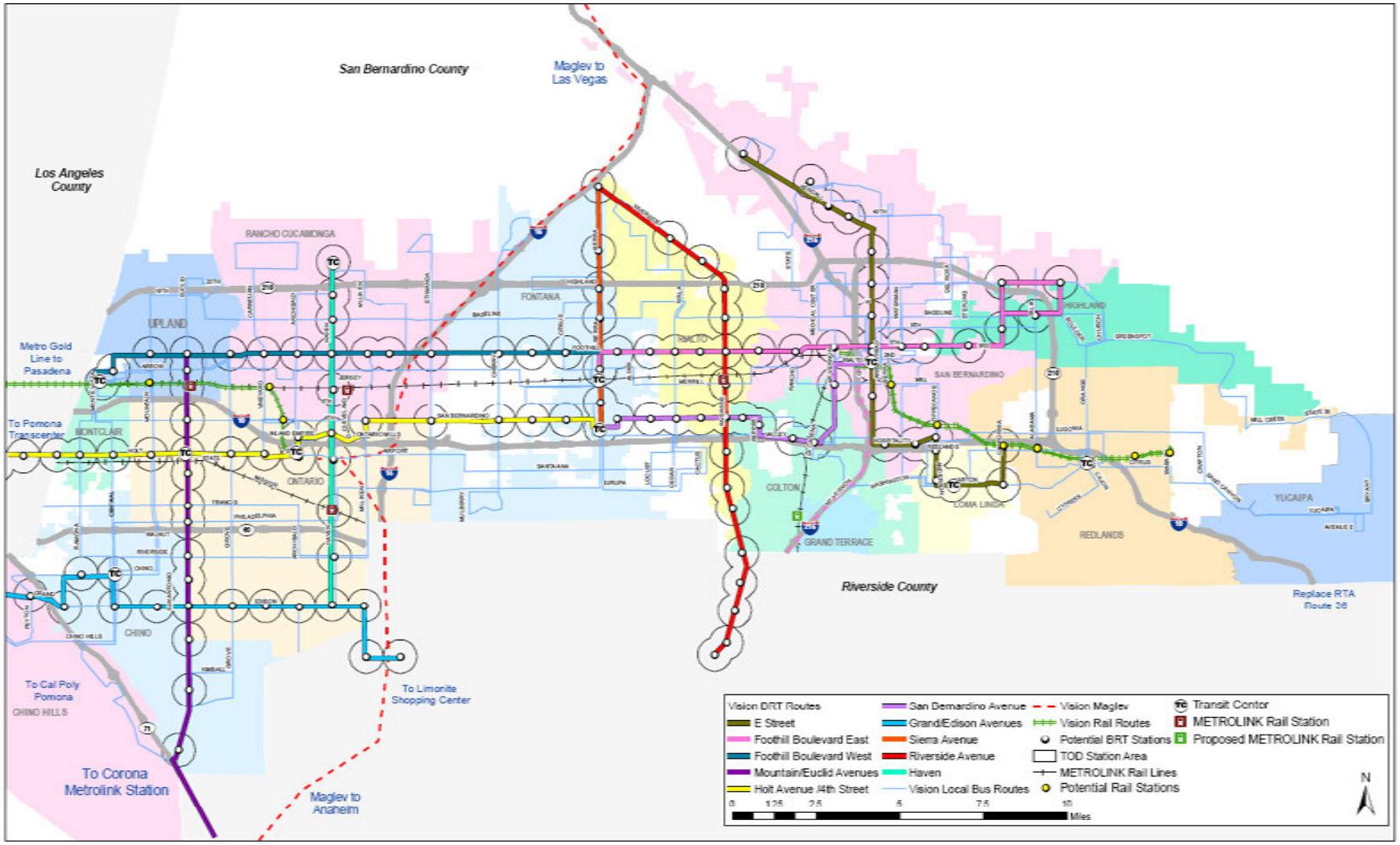


Figure 5-3: The Vision Alternative

Source: Parsons, 2009.



VISION Sustainable Land Use Scenario

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

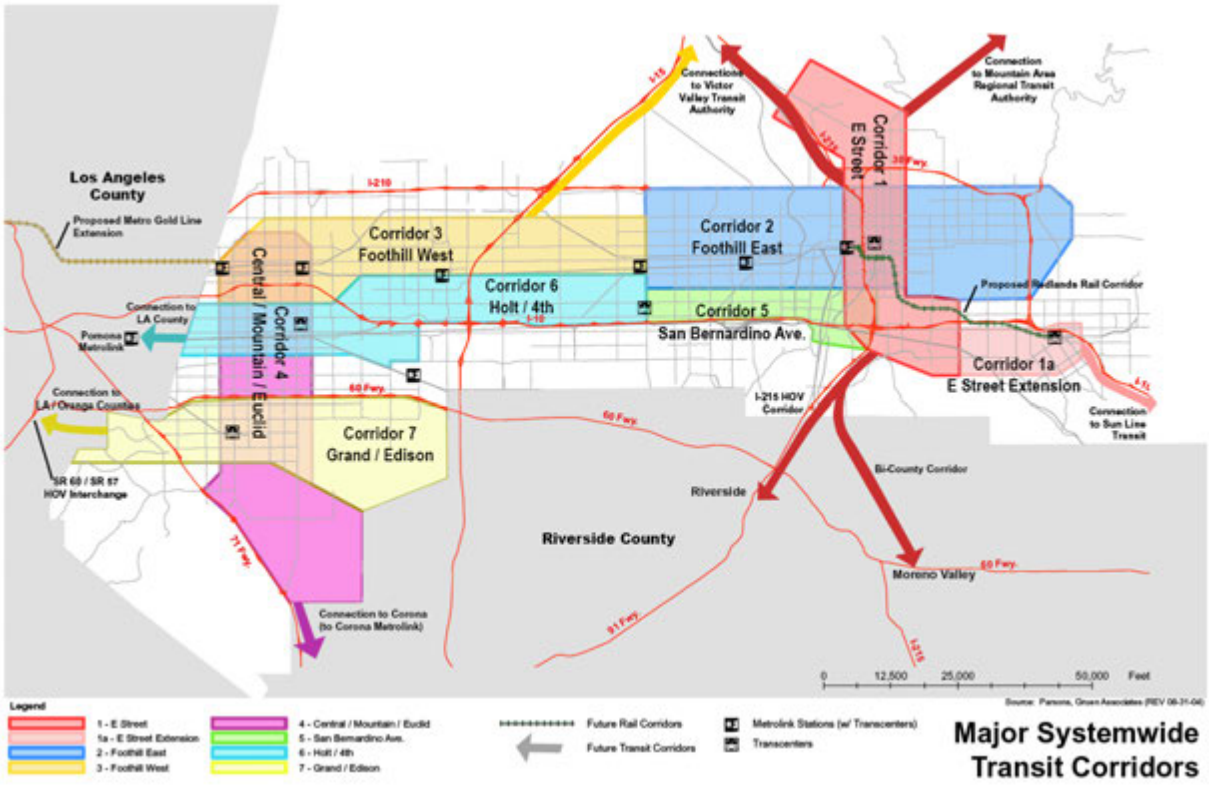
Source: Parsons, 2009.

Figure 5-4: The Vision Sustainable Land Use Alternative

Table 5-1: Mass Transit Service Assumptions for LRTP Alternatives

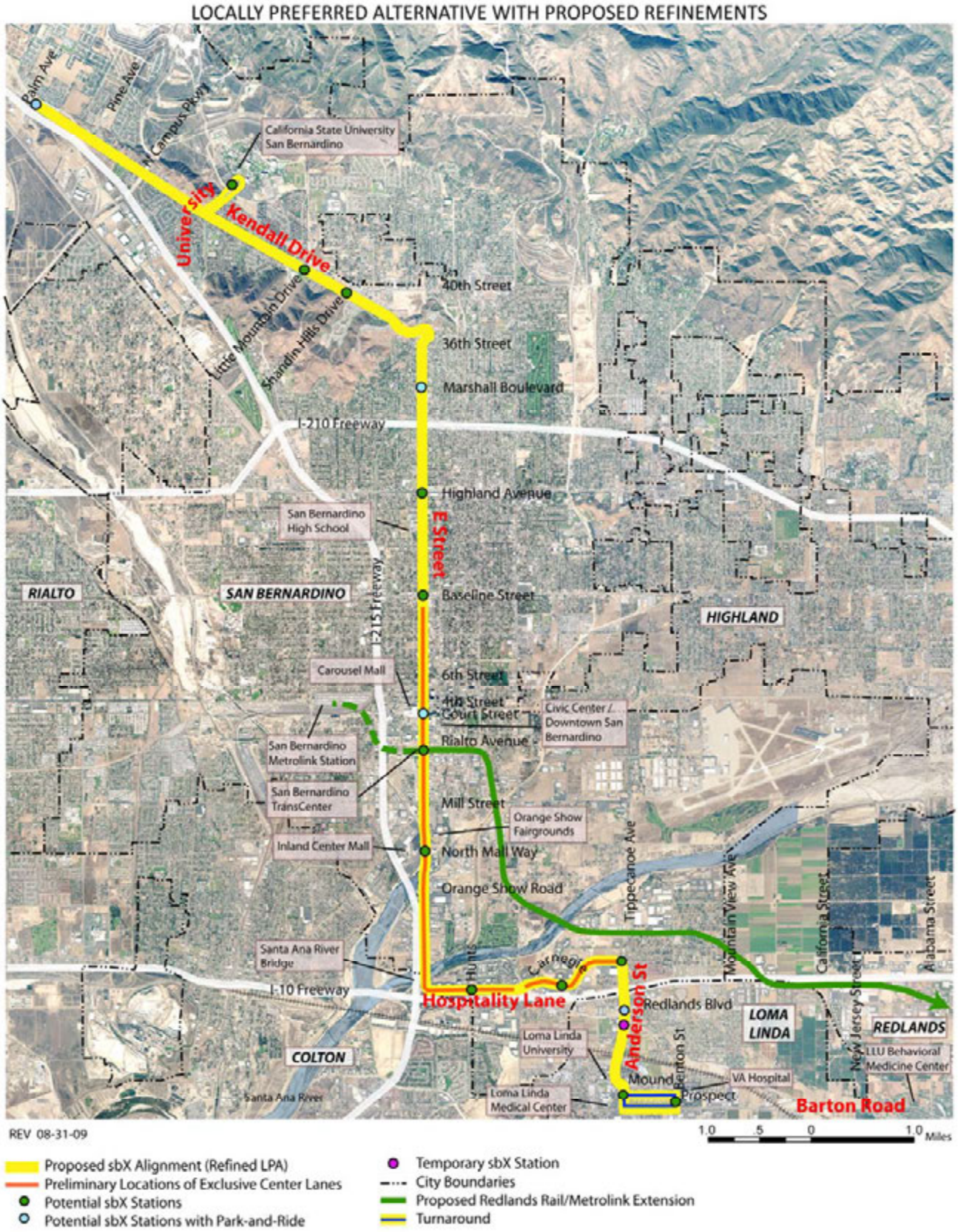
Transit Modes	2035 Baseline Alternative	2035 Planned Alternative	2035 Vision Alternative
Omnitrans Fixed Route Service	Omnitrans service similar to existing service with Routes 1, 3/4, 5, 7, 8, 9, 10, 11, and 14 realigned to new San Bernardino Transit Station	Omnitrans service reconfigured to create grid system of trunk routes supported by circulator routes; E Street BRT (sbX) Refined LPA operated at 5 minute headway - 16 stations over a total of 16 miles in length with 4 park-and-ride lots.	Same as 2035 Planned Alternative plus extension of E Street BRT to California Station of Redlands Rail line; Nine additional corridors operated with for BRT service.
Other Transit Operators	MARTA service from Lake Arrowhead to San Bernardino (new Midday round trip service); MARTA service from Big Bear to San Bernardino (Tripper service); RTA service as existing on Route 25; Add RTA Route 204 Riverside to Montclair; Foothill Transit "Silver Streak" service, other Foothill service as exiting to Montclair on Routes 187, 190, 480, 492, 690, and 699, and Foothill Transit service to Chino Hills on Route 497; No VVTA service from Victor Valley	Gold Line Extension to Montclair. VVTA service from Victor Valley to CSUSB and San Bernardino Transcenter; VVTA service from Victor Valley to Ontario and Fontana Metrolink; MARTA service as in Baseline; RTA service as in Baseline on Routes 25 and 204; Foothill Transit "Silver Streak" service and other services to Montclair on Routes 187, 190, 480, 492, 497, 690, and 699; and OCTA service from Irvine to Chino Hills on Route 758	Background bus is the same as the 2035 Planned Alternative, with minor route deviations to serve BRT stations; Gold Line is extended to Ontario Airport
Metrolink Commuter Rail	Metrolink service same as existing except that the line is extended to serve the new San Bernardino Transit Station; New Parking structure at existing San Bernardino Station	Metrolink service with headways improved to levels shown in the new draft Strategic Plan (18 minutes peak and 60 minutes off-peak on San Bernardino Line)	Same as 2035 Planned
Redlands Rail	No Rail service.	Rail service with 10 minute headways and three feeder routes,	Same as 2035 Planned, plus Extension to Mentone

Source: Hexagon, 2009.



Source: Gruen Associates, 2004.

Figure 5-5: sbX System-wide Plan (2004)



Source: Gruen Associates, 2009.

Figure 5-6: E Street sbX

Omnitrans SRTP

The *Short Range Transit Plan (SRTP)* is a Comprehensive Operational Assessment that lays the foundation for increasing ridership, providing reliable service that reflects their projected financial situation.

Southern California Regional Rail Authority's (SCRRA) Strategic Assessment

The *SCRRA Strategic Assessment* is a conceptual plan for the development of the Metrolink commuter rail system through 2030. While the potential for increasing demand is clearly recognized, the plan prioritizes demand-driven service expansion with operational and fiscal realities.

Six Service Scenarios were developed for the *SCRRA Strategic Assessment*. Under each scenario, service levels, ridership and costs/benefits were projected for 2010, 2015, 2020 and 2030. Possible service levels were determined for each line. For the lines serving the Omnitrans service area:

- San Bernardino Line service levels would remain constant at 34 trains/weekday through 2010 and be increased to 48 in 2015.
- Inland Empire-Orange County Line service levels will rise from the current 12 trains/weekday to 20 in 2010 and 24 in 2015.
- Riverside Line service levels will rise from the current 12 trains/weekday to 22 by 2015.

If the increased service levels on the Inland Empire-Orange County Line are implemented, demand is expected to increase for enhanced feeder service to the San Bernardino Metrolink Station.

SANBAG Comprehensive Transportation Plan (CTP)

SANBAG is currently updating San Bernardino County's CTP to the year 2030[11]. Goals, objectives, performance indicators and alternative transportation scenarios are being defined and analyzed to create a preferred plan alternative. In cooperation with local agencies, this work has involved updating the socioeconomic forecasts to the year 2030 and the base year streets and highway network for the CTP traffic model.

The updated CTP will:

- Identify transportation improvements and strategies to enhance system performance and achieve emission reductions to meet air quality requirements; and
- Integrate goods movement strategies currently under development and serve as a basis for action programs to be implemented through the Congestion Management Program.

Public Transit- Human Services Transportation Coordination Plan for San Bernardino County

The remote portions of the County face their own unique challenges and opportunities in developing their transit ridership. A recent study prepared by SANBAG entitled "San Bernardino County Public Transportation-Human Services Transportation Coordination Plan.

SANBAG in December of 2007 developed a *Public Transit-Human Services Transportation Coordination Plan* for San Bernardino County. This plan identified the short term mobility needs for six remote areas of the County and recommended strategies and priorities to

[11] http://www.SANBAG.ca.gov accessed 07/07/09

help improve access to human necessities such as, medical appointments, trips to the pharmacy, social service agency visits, and grocery store shopping for the elderly, disabled and low-income individuals. With the reauthorization in 2005 of the federal transportation bill, SAFETEA-LU, new regulations specify that it is desirable for federal monies to be coordinated and consolidated in "a process through which representatives of different agencies and client groups work together to achieve any one or all of the following goals: more cost-effective service delivery; increased capacity to serve unmet needs; improved quality of service; and services which are more easily understood and accessed by riders." Moreover, FTA mandates that projects receiving FTA 5310, JARC or New Freedom funds be part of the plan adopted by SANBAG – addressing ways to improve service through coordination and/or consolidation.

5.2 2035 Baseline Alternative

This alternative assumes all existing roadway and transit services will continue and be supplemented by improvements already funded.

Planned Roadway Improvements

For roadway improvements in the 2035 Baseline Alternative, the most significant funded projects are carpool lanes that will be constructed on the I-10 and I-215 freeways. The Valley also has a limited number of street improvements funded along with improvements to traffic signal systems. The highway network used for the analysis of the Baseline Alternative is based on the SCAG Baseline network, plus highway improvements in the San Bernardino Valley that are funded by the extension of Measure I.

No additional Rail service expansions are included. Bus service for the San Bernardino Valley in the Baseline Alternative is shown in Figure 5-1 and specified as follows:

- Omnitrans fixed route bus service is constrained to existing bus services operated as of January, 2009, which include 26 local bus routes and one express bus route. The planned E Street BRT service is specifically excluded from the Baseline Alternative in order to provide a baseline context for the transit ridership analysis.
- Foothill Transit service includes eight local and express bus routes providing transit service to either Montclair Transcenter or Chino Transit Center, including the "Silver Streak" service from the Montclair Transcenter to downtown Los Angeles.
- MARTA service includes 3 daily round trips connecting Big Bear Valley to San Bernardino and Highland, and four daily trips serving Lake Arrowhead to San Bernardino and Highland.
- OCTA services include Route 758, and express bus service between Irvine and Chino Transit Center.
- RTA service includes Route 25 from Riverside to Loma Linda, and Route 204 from Riverside to Montclair through Ontario Mills Mall.

Service frequencies for rail and bus routes serving the San Bernardino Valley in this alternative are summarized in Table 5-2.

Table 5-2: San Bernardino Valley Mass Transit Service Assumptions for the baseline Alternative

Operator	Route Number	Route Description	Service Type	Peak Headway	Off-Peak Headway
Omnitrans	1	Colton-Del Rosa	Local Bus	15	15
Omnitrans	2	Cal State-E St-Loma Linda	Local Bus	15	15
Omnitrans	3	Baseline-Highland-SB-Yucaipa	Local Bus	20	20
Omnitrans	5	Cal State-Del Rosa-Downtown SB	Local Bus	30	30
Omnitrans	7	N San Bern-Sierra-Downtown SB	Local Bus	30	60
Omnitrans	8	San Bernardino-Mentone-Yucaipa	Local Bus	60	60
Omnitrans	9	San Bernardino-Redlands-Yucaipa	Local Bus	60	60
Omnitrans	10	Fontana-Baseline-San Bernardino	Local Bus	30	30
Omnitrans	11	San Bernardino-Muscoy	Local Bus	30	30
Omnitrans	14	Fontana-Foothill-San Bernardino	Local Bus	15	15
Omnitrans	15	Fontana-Rialto-SB-Highlands-Redlands	Local Bus	30	30
Omnitrans	19	Redlands-Colton-Fontana	Local Bus	30	30
Omnitrans	20	Fontana-Metrolink	Local Bus	30	30
Omnitrans	22	S Rialto-N Rialto	Local Bus	30	30
Omnitrans	29	Fontana-Cedar-N Rialto	Local Bus	60	60
Omnitrans	61	Fontana-Ontario-Pomona	Local Bus	15	15
Omnitrans	63	Chino-Ontario-Upland	Local Bus	30	30
Omnitrans	65	Montclair-Chino Hills	Local Bus	30	30
Omnitrans	66	Fontana-Foothill-Montclair	Local Bus	30	30
Omnitrans	67	Montclair-Baseline-Fontana	Local Bus	60	60
Omnitrans	68	Chino-Montclair-Chaffey	Local Bus	30	30
Omnitrans	80	Montclair-Ontario-Chaffey	Local Bus	30	30
Omnitrans	81	Ontario-Ont. Mills-Chaffey	Local Bus	60	60
Omnitrans	82	Rancho-Fontana-Sierra Lakes	Local Bus	60	60
Omnitrans	83	Upland-Euclid-Chino	Local Bus	30	60
Omnitrans	215	San Bernardino-Riverside Express	Express Bus	30	30
Metrolink	-	San Bernardino Line	Commuter Rail	20	60
Metrolink	-	Riverside Line	Commuter Rail	36	-
Metrolink	-	IE/OC Line	Commuter Rail	45	120
Foothill	-	Silver Streak	Express Bus	12	15
Foothill	187	Montclair-Pasadena	Local Bus	20	20
Foothill	197	Montclair-Pomona	Local Bus	30	60
Foothill	480	Montclair-Los Angeles	Local Bus	30	30
Foothill	492	Montclair-El Monte	Local Bus	30	30
Foothill	497	Chino-Los Angeles Express	Express Bus	15	-
Foothill	690	Montclair-Pasadena Express	Express Bus	30	-
Riverside	25	Riverside-Loma Linda	Local Bus	60	60
Riverside	204	Riverside-Montclair	Express Bus	45	-
MARTA	-	Lake Arrowhead Off Mountain	Express Bus	120	120
MARTA	-	Big Bear Off Mountain	Express Bus	180	-
OCTA	758	Chino-Irvine Express	Express Bus	90	-

Source: Hexagon, 2009.

By definition, the 2035 Baseline Alternative includes only existing plus funded transportation because ridership is holding somewhat steady in recent years and current funding is limited for service improvements.

Boarding on northeast side of E Street/4th Street

Metrolink has prepared a Strategic Assessment to chart expansion of service through 2035. At this time, however, only the current level of service is funded. For the purposes of this study, all alternatives tested by the model will assume that all Metrolink trips will serve both the existing station and the new one at the proposed San Bernardino Transcenter at Rialto and E Streets. The Baseline Alternative also assumes increases in service between now and year 2030 as shown in internal Metrolink documents, even though those service levels have not been adopted or funded. In this way the need for commuter rail service, Park and Ride spaces and other features can be assessed.

There will be, however, some significant changes in transit operations in the San Bernardino Valley. These include:

- **New San Bernardino Transit Station.** Omnitrans plans to move their downtown transfer function from the temporary but long-lived 4th Street location to a new facility at Rialto and E Street. Omnitrans has completed the purchase of the land for the new facility. This project is now in the design phase and it is scheduled to be ready for transit operations in 2012, and for completion of the depot in 2013.

  The new San Bernardino Transit Station will become the major transfer point for all the various modes of transit in the area. The San Bernardino Transit Station will serve as the major transfer site for Omnitrans' routes serving the East Valley. Routes approaching downtown San Bernardino from the south will be rerouted directly into the new facility before heading back to their current route. Routes approaching downtown from the north will be extended down to Rialto.

  Additionally, the San Bernardino Transit Station will serve as the site of a new Metrolink station, with the trips now terminating at the San Bernardino Metrolink Station (Old Santa Fe Depot) extended to the new Transit Station. The planned E Street BRT and Redlands Rail services (see Plan Alternative) will also serve the San Bernardino Transit Station.

Other transit services featured in the 2035 Baseline Alternative include:

- **Metrolink Commuter Rail** – Metrolink service on the San Bernardino Line terminates (or originates) at the existing San Bernardino Station on 3rd Street west of downtown San Bernardino. The City plans to build a 350 space parking structure on site to relieve overcrowding. No additional service to this station is planned. However, when the new San Bernardino Transit Station is built, the commuter train trips will be extended to the new station on Rialto Avenue and E Street.

The Baseline Alternative also includes a constrained level of transit service in the

Victor Valley, commensurate with service described in the Short Range Transit Plan.

5.3 2035 Plan Alternative

By definition, this alternative is an enhancement of the 2035 Baseline Alternative. In this alternative, the transit services included in the 2035 Baseline Alternative are supplemented with transit improvements beyond what is currently funded. It adds all feasible major transit investments and facility improvements in the Valley that are considered to be in the detailed project development pipeline. These include increases in levels of service to keep pace with additional ridership due to population and employment growth and to maintain headways in light of reduced bus speeds resulting from increased levels of traffic congestion.

The service plan for the 2035 Plan Alternative includes a redesign of many trunk routes in the Omnitrans service area which will result in a grid system of local transit routes serving much of the San Bernardino Valley. The Omnitrans routes included in this alternative are displayed in Figure 5-7.

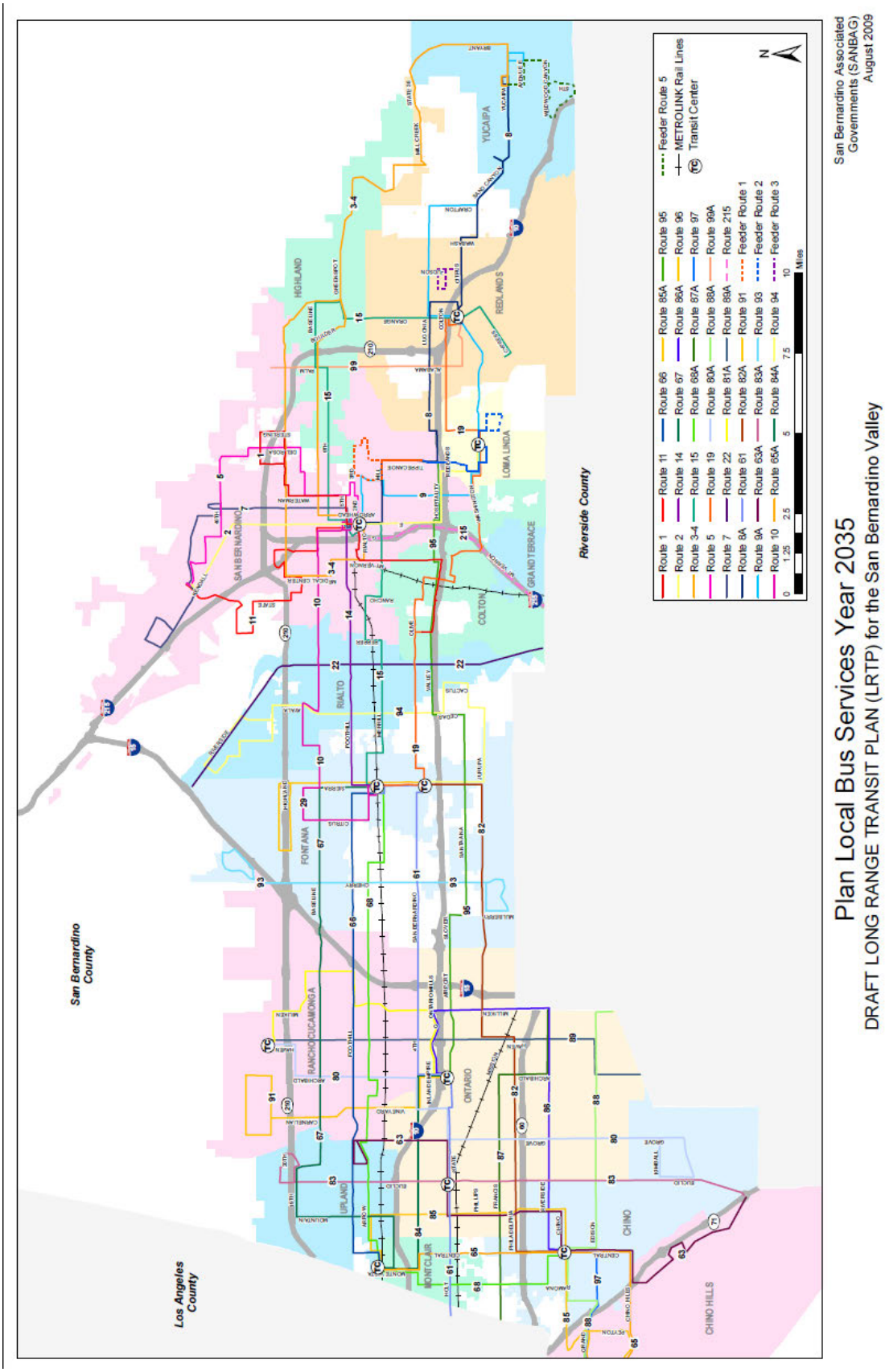
The travel demand model was used to assess the ridership potential of each transit route, and an equilibration procedure was used to adjust the service frequencies.

The LRTP Planned alternative also includes:

- **Redlands Rail Line plus supporting shuttles.** The proposed Redlands Rail Line is a partially funded east-west rail line with one end in the E Street Corridor (see Figure 5-8). The rail line has been planned by SANBAG as a key connection between Redlands and central San Bernardino. The *Redlands Passenger Rail Station Area Plan* identifies nine Redlands Passenger Rail stations with TOD along the former BNSF Redlands Subdivision right-of-way, shown in Figure 5-8. Possible station sites include the proposed San Bernardino Transit Station, Mill Street, Orange Show Road, Tippecanoe Avenue, Mountain View Avenue, California Street, Alabama Street, New York Street, Downtown Redlands (with three possible alternatives), and Grove Street.

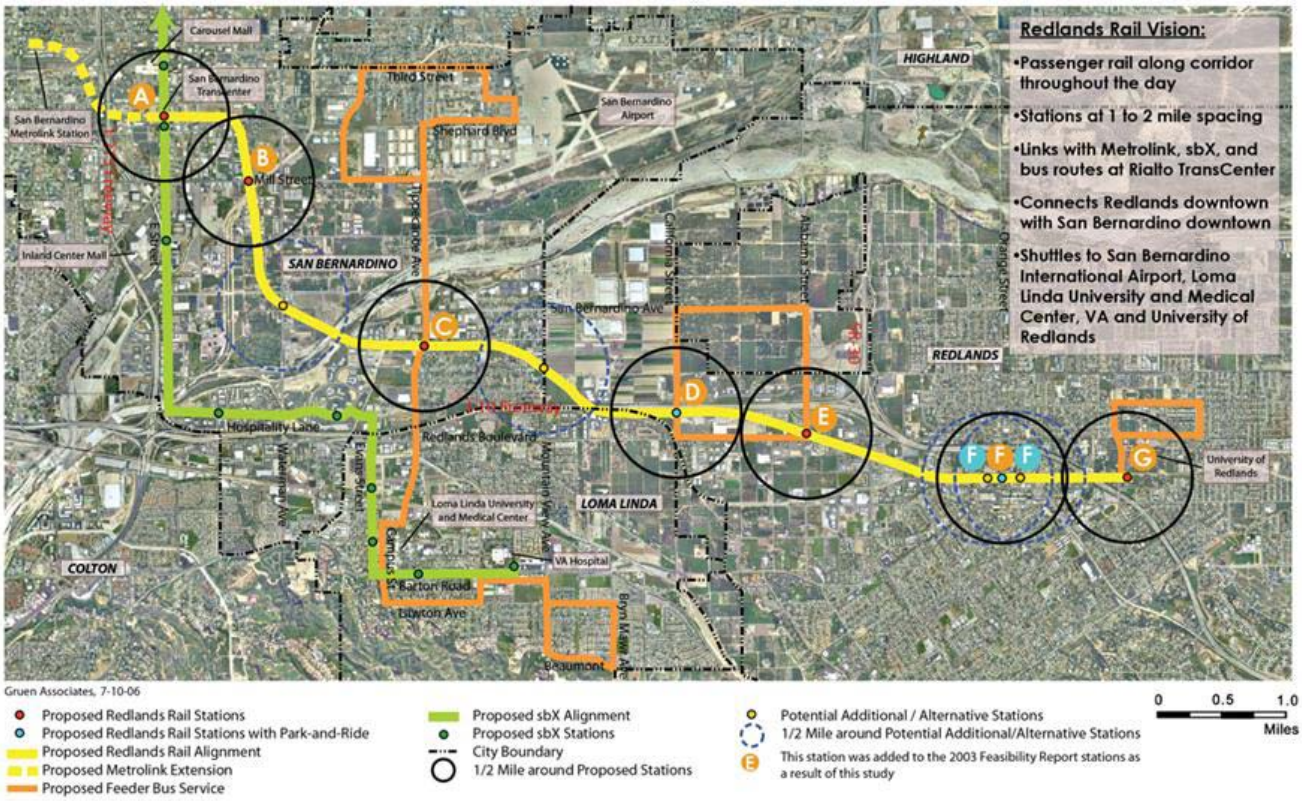
  The service is envisioned to operate with Diesel Multiple Unit (DMU) trains on 7.5 minute headways. The western terminus will be the new San Bernardino Transit Station at Rialto Avenue and E Street. Shuttle service between specific stations and San Bernardino International Airport, Loma Linda Medical University and Medical Center, Loma Linda VA Hospital, University of Redlands, Crafton Hills College and the planned Yucaipa Transcenter may be warranted.

- The introduction of this rail passenger service will impact east-west transit ridership in the East Valley and also require East Valley service restructuring as feeders around the final Redlands Passenger Rail stations. TOD development proposed around each station will concentrate densities and activities, potentially generating increased local transit demand.



Source: Parsons, 2009.

Figure 5-7: Planned Omnitrans bus routes



Source: Gruen Associates, 2006.

Figure 5-8: Redlands Rail Alignment and Station Locations

In addition to the Redlands Passenger Rail Service, SANBAG is also examining the transit-oriented development of the proposed extension.

The plan was released in November 2006 and has been presented to the three involved cities. Recommendations for transit-oriented zoning changes are set out for the proposed stations. Some aspects of the extension remain to be worked out, including the location of a station in downtown Redlands.

At the April 4, 2007 SANBAG Board meeting, the Board decided to continue studying the passenger rail extension. While the extension is still several years away, approval was given for more in-depth studies, and for SANBAG to prepare an application for $75 million in federal funding. With approval of the plan, the Cities of San Bernardino, Loma Linda, and Redlands will be asked to start considering land use changes around the proposed stations, such as denser housing, commercial development, pedestrian and bicycle paths and other amenities.

E Street Bus Rapid Transit (sbX)

- Of the seven corridors identified in the 2004 Omnitrans Systemwide Plan, the sbX E Street BRT Corridor emerged as the highest priority transit Corridor in the San Bernardino Valley. The 15.7 mile BRT has 16 stations and 4 park-and-ride facilities at key locations along the corridor. It is

scheduled for Construction in 2010 and revenue operation in 2013.

The sbX E Street Corridor BRT Project will connect the northern portion of the City of San Bernardino with the City of Loma Linda (see Figure 5-2). The proposed transit route would begin in the vicinity of Palm Avenue and Kendall Drive and terminate in the vicinity of the Veterans Administration Hospital located at Barton Road and Benton Street.

The sbX service will operate on 5-minute headways throughout the day. Headways will be 10 minutes in the evening hours of weekdays. sbX will be supported by a system of transit services. This system includes shuttles at CSUSB on the northern end of the Corridor and in Loma Linda on the southern end in addition to the shuttles which will feed the Redlands Rail Line. The sbX service on E Street will be supported by a continuation of Route 2 service as a "shadow service" serving "in-between" bus stops. The sbX service will be enhanced by priority treatment at intersections and will operate both in "mixed traffic" and in its own exclusive lane.

The planned Alternative also includes:

- **Higher Metrolink Commuter Rail 2030 Service Levels.** Metrolink commuter rail service will be enhanced from that shown in the 2035 Baseline Alternative with additional peak and off-peak service**.**
- **Metro Gold Line Extension to Montclair-** Currently, the Metro Gold Line train service operates from L.A. Union Station to Pasadena. An extension east along the I-210 to San Bernardino County (a line to Montclair is in the detailed corridor planning stages).

The Metro Gold Line Authority is proposing to extend the current Gold Line Light Rapid Transit system 16 miles east from Pasadena, where it currently ends, to Montclair (Figure 5-9). Preliminary Engineering Studies are underway and federal funding for construction is expected, even though the alignment faces stiff competition in the City of Los Angeles from other proposed transit alignments. The first segment of the Gold Line extension, from Arcadia to Azusa, is scheduled for completion in 2013. The second phase, to the Montclair Transcenter, is currently undertaking an extensive transit-oriented development (TOD) study, evaluating stations along the proposed 16 mile extension. Each city along the corridor is at different development stages in regards to TOD readiness and acceptance.

The TOD analysis is particularly relevant to the LRTP as the third phase is proposed to connect the Montclair Transcenter to the Ontario Airport. Montclair has recently completed the *North Montclair Specific Plan*, which significantly increases the range of uses and proposed densities in and around the Transcenter into the area in order to build on the existing commercial center and support transit initiatives, such as the Gold Line extension and Omnitrans efforts to enhance transit connections to other parts of the San Bernardino Valley. Service to the Ontario Airport would support a unique opportunity to create a multi-modal transit center.

Source: Metro Gold Line Foothill Extension Construction Authority, 2009.

Figure 5-9: Metro Gold Line Extension

- **Loma Linda Shuttle** – The disbursed nature of the medical and educational facilities in the City of Loma Linda and the increasing need for people to move between those facilities will support a Loma Linda circulator service. The circulator will serve major facilities, large parking areas and major transit stops.
- **California State University-San Bernardino (CSUSB) Shuttle** – CSUSB, anchoring the northern end of the E Street transit Corridor will provide a circulator to move people from remote parking lots to the center of campus and the transit station as well as around the large campus.

Other bus operators – Foothill Transit serving the San Gabriel Valley, Mountain Area Regional Transit Authority (MARTA) serving Big Bear and Lake Arrowhead, Orange County transportation Authority (OCTA) and Riverside Transit Agency – operate bus routes that serve the San Bernardino Valley. These bus routes are included in the 2035 Baseline Alternative and will remain in place for the 2035 Plan Alternative.

The 2035 Baseline Alternative does not provide transit connections to two significant population centers adjacent to the San Bernardino Valley – the Victor Valley to the north and the Coachella Valley to the east. Victor Valley Transit Authority provided service into the San Bernardino Valley until June 2005. Given the projected population growth in the Victor Valley, the 2035 Plan Alternative assumes that funding will be found to implement such service before 2035.

The 2035 Plan Alternative includes two transit lines between the Victor Valley and the San Bernardino Valley – one route serving Cal State University – San Bernardino and the E Street BRT line, and another route serving the Ontario Mills Mall and Rancho Cucamonga Metrolink Station.

The 2035 Plan Alternative also includes a proposed bus service between the Coachella Valley and hospital services in Loma Linda. This service would be operated by Sunline Transit Agency, and would provide transfer services to the San Bernardino Valley for Morongo Basin residents.

The analysis of the 2035 Plan Alternative began by coding all transit routes in the Omnitrans system with high service frequencies – 15-minute peak and off-peak period headways. Iterative model runs (equilibration) were used to fine tune the headways to provide cost-effective service with high seating probability throughout the system. The results of this equilibration process, and all other service frequencies for transit routes serving the San Bernardino Valley for the 2035 Plan Alternative, are displayed in Table 5-3.

Table 5-3: San Bernardino Valley Route Service Frequencies in the Plan Alternative

Operator	Route Number	Route Description	Service Type	Peak Headway	Off-Peak Headway
Omnitrans	301	E Street sbX	BRT	5	10
Omnitrans	1	Colton-Del Rosa	Local Bus	10	15
Omnitrans	2	Cal State-E St-Loma Linda	Local Bus	20	30
Omnitrans	3	Baseline-Highland-SB-Yucaipa	Local Bus	30	60
Omnitrans	4	Baseline-Highland-San Bernardino	Local Bus	15	20
Omnitrans	5	Cal State-Del Rosa-Downtown SB	Local Bus	30	30
Omnitrans	7	N San Bern-Sierra-Downtown SB	Local Bus	15	30
Omnitrans	8	San Bernardino-Mentone-Yucaipa	Local Bus	15	30
Omnitrans	9	San Bernardino-Redlands-Yucaipa	Local Bus	20	30
Omnitrans	10	Fontana-Baseline-San Bernardino	Local Bus	10	20
Omnitrans	11	San Bernardino-Muscoy	Local Bus	30	30
Omnitrans	14	Fontana-Foothill-San Bernardino	Local Bus	10	15
Omnitrans	15	Fontana-Rialto-SB-Highlands-Redlands	Local Bus	10	15
Omnitrans	19	Redlands-Colton-Fontana	Local Bus	15	15
Omnitrans	22	S Rialto-N Rialto	Local Bus	15	20
Omnitrans	61	Fontana-Ontario-Pomona	Local Bus	10	20
Omnitrans	63	Chino-Ontario-Upland	Local Bus	30	30
Omnitrans	65	Montclair-Chino Hills	Local Bus	15	30
Omnitrans	66	Fontana-Foothill-Montclair	Local Bus	15	20
Omnitrans	67	Montclair-Baseline-Fontana	Local Bus	15	30
Omnitrans	68	Chino-Montclair-Chaffey	Local Bus	15	30
Omnitrans	80	Montclair-Ontario-Chaffey	Local Bus	20	30
Omnitrans	81	Ontario-Ont. Mills-Chaffey	Local Bus	60	60
Omnitrans	82	Rancho-Fontana-Sierra Lakes	Local Bus	20	30
Omnitrans	83	Upland-Euclid-Chino	Local Bus	15	30
Omnitrans	84	San Bernardino Street E/W Corridor	Local Bus	60	60
Omnitrans	85	Mountain Avenue N/S Corridor	Local Bus	20	30
Omnitrans	86	Chino-Ontario (Riverside/Milliken)	Local Bus	60	60
Omnitrans	87	Francis Avenue E/W Corridor	Local Bus	60	0
Omnitrans	88	Edison Avenue E/W Corridor	Local Bus	30	60
Omnitrans	89	Haven Avenue N/S Corridor	Local Bus	20	60
Omnitrans	93	Cherry Avenue N/S Corridor	Local Bus	60	0
Omnitrans	94	Cedar/Ayala N/S Corridor	Local Bus	30	60
Omnitrans	95	Santa Ana Avenue E/W Corridor	Local Bus	60	0
Omnitrans	96	Sierra Avenue N/S Corridor	Local Bus	30	30

Operator	Route Number	Route Description	Service Type	Peak Headway	Off-Peak Headway
Omnitrans	97	Chino-Industry Metrolink	Local Bus	60	0
Omnitrans	98	Yucaipa-Beaumont	Local Bus	30	30
Omnitrans	99	Palm/Alabama N/S Corridor	Local Bus	30	60
Omnitrans	215	San Bernardino-Riverside Express	Express Bus	15	30
Metrolink	-	Riverside Line	Commuter Rail	23	240
Metrolink	-	San Bernardino Line	Commuter Rail	18	60
Metrolink	-	IE/OC Line	Commuter Rail	20	60
Redlands	-	Redlands Rail	DMU Rail	10	10
Redlands	101	Redlands Rail Feeder Bus #1	Feeder Bus	30	30
Redlands	102	Redlands Rail Feeder Bus #2	Feeder Bus	30	30
Redlands	104	Redlands Rail Feeder Bus #4	Feeder Bus	20	20
MTA	-	Gold Line	Light Rail	5	10
Foothill	187	Montclair-Pasadena	Local Bus	20	20
Foothill	197	Montclair-Pomona	Local Bus	30	60
Foothill	480	Montclair-Los Angeles	Local Bus	30	30
Foothill	492	Montclair-El Monte	Local Bus	30	30
Foothill	497	Chino-Los Angeles Express	Express Bus	15	-
Foothill	690	Montclair-Pasadena Express	Express Bus	30	-
Foothill	-	Silver Streak	Express Bus	12	15
Riverside	204	Riverside-Montclair	Express Bus	45	-
Riverside	25	Riverside-Loma Linda	Local Bus	60	60
MARTA	-	Big Bear Off Mountain	Express Bus	180	-
MARTA	-	Lake Arrowhead Off Mountain	Express Bus	120	120
OCTA	758	Chino-Irvine Express	Express Bus	90	-
Sun Line	-	Coachella-Loma Linda Express	Express Bus	120	120

Source: Hexagon, 2009.

5.4 2035 Vision Alternative

The 2035 Vision Alternative, shown in Figure 5-3 has the same background transit services as those defined in the 2035 Plan Alternative, with minor deviations to serve specific transfer locations.

The transit service assumptions for the LRTP Vision Alternative are shown in Table 5-4. The 2035 Vision Alternatives described below feature all of the transit and roadway elements that are included in the 2035 Planned LRTP Alternative. To this level of transit, they add various additional modes and alignments. In conjunction with the System-wide plan, the 10 transit corridors identified are presented along with preliminary alignment alternatives to be further analyzed. The Omnitrans routes included in the Vision Alternative are displayed in Figure 5-3.

Table 5-4: San Bernardino Valley Route Service Frequencies in 2035 Vision Alternative

Operator	Route Number	Route Description	Service Type	Peak Headway	Off-Peak Headway
Omnitrans	301	E Street sbX Redlands Extension	BRT	5	10
Omnitrans	302	Foothill East sbX	BRT	5	10
Omnitrans	303	Foothill West sbX - Foothill	BRT	10	15
Omnitrans	304	Euclid sbX	BRT	10	15
Omnitrans	305	San Bernardino Avenue sbX - San Bernardino	BRT	10	10
Omnitrans	306	Holt/Fourth sbX	BRT	10	15
Omnitrans	307	Grand/Edison sbX	BRT	10	20
Omnitrans	308	Sierra sbX	BRT	10	20
Omnitrans	309	Riverside sbX	BRT	10	10
Omnitrans	310	Haven sbX	BRT	10	15
Omnitrans	1	Colton-Del Rosa	Local Bus	10	15
Omnitrans	2	Cal State-E St-Loma Linda	Local Bus	20	30
Omnitrans	3	Baseline-Highland-SB-Yucaipa	Local Bus	60	60
Omnitrans	4	Baseline-Highland-San Bernardino	Local Bus	20	20
Omnitrans	5	Cal State-Del Rosa-Downtown SB	Local Bus	20	30
Omnitrans	7	N San Bern-Sierra-Downtown SB	Local Bus	20	30
Omnitrans	8	San Bernardino-Mentone-Yucaipa	Local Bus	15	30
Omnitrans	9	San Bernardino-Redlands-Yucaipa	Local Bus	30	30
Omnitrans	10	Fontana-Baseline-San Bernardino	Local Bus	15	30
Omnitrans	11	San Bernardino-Muscoy	Local Bus	30	30
Omnitrans	14	Fontana-Foothill-San Bernardino	Local Bus	20	20
Omnitrans	15	Fontana-Rialto-SB-Highlands-Redlands	Local Bus	10	15
Omnitrans	19	Redlands-Colton-Fontana	Local Bus	20	20
Omnitrans	22	S Rialto-N Rialto	Local Bus	20	30
Omnitrans	61	Fontana-Ontario-Pomona	Local Bus	20	30
Omnitrans	63	Chino-Ontario-Upland	Local Bus	30	30
Omnitrans	65	Montclair-Chino Hills	Local Bus	15	30
Omnitrans	66	Fontana-Foothill-Montclair	Local Bus	20	30
Omnitrans	67	Montclair-Baseline-Fontana	Local Bus	20	30
Omnitrans	68	Chino-Montclair-Chaffey	Local Bus	20	30
Omnitrans	80	Montclair-Ontario-Chaffey	Local Bus	15	30
Omnitrans	81	Ontario-Ont. Mills-Chaffey	Local Bus	60	60
Omnitrans	82	Rancho-Fontana-Sierra Lakes	Local Bus	20	30
Omnitrans	83	Upland-Euclid-Chino	Local Bus	30	30
Omnitrans	84	San Bernardino Street E/W Corridor	Local Bus	30	60
Omnitrans	85	Mountain Avenue N/S Corridor	Local Bus	20	30
Omnitrans	86	Chino-Ontario (Riverside/Milliken)	Local Bus	30	60
Omnitrans	87	Francis Avenue E/W Corridor	Local Bus	60	60
Omnitrans	88	Edison Avenue E/W Corridor	Local Bus	30	30
Omnitrans	89	Haven Avenue N/S Corridor	Local Bus	30	30
Omnitrans	91	Vineyard/Carnelian N/S Corridor	Local Bus	60	0
Omnitrans	93	Cherry Avenue N/S Corridor	Local Bus	30	60
Omnitrans	94	Cedar/Ayala N/S Corridor	Local Bus	20	30
Omnitrans	95	Santa Ana Avenue E/W Corridor	Local Bus	60	0

Operator	Route Number	Route Description	Service Type	Peak Headway	Off-Peak Headway
Omnitrans	96	Sierra Avenue N/S Corridor	Local Bus	30	60
Omnitrans	97	Chino-Industry Metrolink	Local Bus	30	60
Omnitrans	98	Yucaipa-Beaumont	Local Bus	30	30
Omnitrans	99	Palm/Alabama N/S Corridor	Local Bus	60	60
Omnitrans	215	San Bernardino-Riverside Express	Express Bus	30	60
Metrolink	-	Riverside Line	Commuter Rail	23	240
Metrolink	-	San Bernardino Line	Commuter Rail	18	60
Metrolink	-	IE/OC Line	Commuter Rail	20	60
Redlands	-	Redlands Rail	DMU Rail	10	10
Redlands	101	Redlands Rail Feeder Bus #1	Feeder Bus	30	30
Redlands	102	Redlands Rail Feeder Bus #2	Feeder Bus	30	30
Redlands	104	Redlands Rail Feeder Bus #4	Feeder Bus	20	20
MTA	-	Gold Line	Light Rail	5	10
Foothill	187	Montclair-Pasadena	Local Bus	20	20
Foothill	197	Montclair-Pomona	Local Bus	30	60
Foothill	480	Montclair-Los Angeles	Local Bus	30	30
Foothill	492	Montclair-El Monte	Local Bus	30	30
Foothill	497	Chino-Los Angeles Express	Express Bus	15	-
Foothill	690	Montclair-Pasadena Express	Express Bus	30	-
Foothill	-	Silver Streak	Express Bus	12	15
Riverside	204	Riverside-Montclair	Express Bus	45	-
Riverside	25	Riverside-Loma Linda	Local Bus	60	60
MARTA	-	Big Bear Off Mountain	Express Bus	180	-
MARTA	-	Lake Arrowhead Off Mountain	Express Bus	120	120
OCTA	758	Chino-Irvine Express	Express Bus	90	-
Sun Line	-	Coachella-Loma Linda Express	Express Bus	120	120

Source: Hexagon, 2009.

BRT Corridors

Corridor 1: E Street

Over the past four years, the sbX E Street Corridor has evolved as the highest priority corridor identified in the System-Wide Transit Corridor Plan for the San Bernardino Valley, through the Alternatives Analysis and selection of the Locally Preferred Alternative (LPA), through the FTA Small Starts rating process, to the current Project Development phase. The sbX E Street Corridor BRT Project shown in Figure 5-6 is a proposed approximately 16-mile long BRT project that will connect the northern portion of the City of San Bernardino with the City of Loma Linda. The BRT alignment starts south of Kendall Drive and Palm Avenue and continues south along Kendall Drive into CSUSB. From CSUSB it returns to Kendall Drive south to E Street where it passes through Downtown San Bernardino to Hospitality Lane. The route then heads east along Hospitality Lane, and then south along Tippecanoe Avenue and Anderson Street to Barton Road. The corridor then heads north on Benton Street and West on Prospect Avenue back to Anderson Street, completing a loop.

Possible future transit connections with the E Street Corridor from outside of the San Bernardino Valley include a Metrolink

connection at the planned downtown San Bernardino Transcenter site, connections to the Victor Valley, Mountain Area Regional Transit Authority, Sun Line Transit, Riverside County (I-215 HOV Corridor and the Bi-County Corridor) and the proposed Redlands Rail Line.

Corridor 2: Foothill Boulevard East

The corridor centered on Foothill Boulevard runs from the Los Angeles County line past San Bernardino International (SBI) Airport and the Highland Plaza area. This corridor has been divided into two segments for easier study and for a phased implementation of future premium transit services. Corridor 2 is the eastern part of the Foothill Corridor. It runs from the Fontana Metrolink station past SBI, with the northern boundary running along Highland Avenue and the southern boundary at Randall and San Bernardino Avenues. Corridor 2 overlaps Corridor 1 (E Street) in downtown San Bernardino. Major activity centers in Corridor 2 include the Fontana Metrolink Station (a major transfer point for Omnitrans riders), the San Bernardino Civic Center, the 4th Street Transit Mall, Highland Plaza, and SBI. As shown in Figure 1-1, possible future transit connections are envisioned from the Victor Valley on I-215.

Potential Alignment

sbX Route 2 is an east/west BRT route with a western terminal station at the Fontana Metrolink Station. This route follows Foothill Blvd to 5th Street in San Bernardino and then heads north on Victoria Avenue, west on Highland Avenue, south on Boulder Avenue, and east on Baseline Avenue to the eastern terminal station at Palm Street (in Highland), and then closing the loop by heading south on Victoria Avenue This 16 mile alignment includes 17 transit stations and two park-and-ride lots. Four of the stations are optional stations, subject to elimination depending on the model-generated ridership potential. The three eastern-most stations are located on a loop, the only loop on any of the ten alignment alternatives studied in the preliminary model run.

Corridor 3: Foothill Boulevard West

Corridor 3 contains the western part of the Foothill Boulevard Corridor. This corridor is anchored on the west by the Montclair Transcenter, which includes the Montclair Metrolink Station and a major transit transfer hub, and on the east by the Fontana Metrolink Station. Other major activity centers include San Antonio Community Hospital, Montclair Plaza, and new developments in the City of Rancho Cucamonga including Victoria Gardens Mall.

Possible regional connections to Corridor 3 from the Victor Valley would occur along I-15 and inter-county transit connections to Los Angeles exist from the Montclair Transcenter and Metrolink Stations. In the future, a possible extension of the Metro Rail Gold Line along the I-210 will reach Corridor 3 at the Montclair Transcenter.

Potential Alignment

sbX Route 3 is an east/west BRT route with a western terminal station at the Montclair Transcenter. This alignment alternative follows Foothill Boulevard through the cities of Upland, Rancho Cucamonga and Fontana to an eastern terminal station at the Fontana Metrolink Station. The alignment connects with Corridor 4 Mountain/Euclid Avenue as well as Corridor 10 Haven Avenue. This alignment includes 15 transit stations and three park-and-ride lots. Four of the stations studied are optional stations subject to elimination.

Corridor 4: Mountain/Euclid Avenue

This north/south corridor in the west San Bernardino Valley has been designated as much for its future growth potential as for its current activity. This corridor has three major north/south arterials that could accommodate BRT services: Euclid, Mountain and Central Avenues. The corridor runs from just north of Foothill Boulevard in the north to the Riverside County Line in the south. It includes the agricultural preserve areas in the Cities of Chino and Ontario, which in the coming decades may be developed to house over 100,000 new residents. Current major activity centers in the corridor include Montclair Plaza, Montclair TransCenter, Ontario Civic Center, Ontario Transit Center, and the Chino prisons.

As displayed in Figure 5-8, the BRT alignment serving Corridor 4 would transition to SR-71 before continuing south to a possible future transit connection at the Corona Metrolink Station.

Potential Alignment

Three preliminary BRT alignments for Corridor 4 were analyzed as part of the LRTP and Euclid Avenue emerged as the strongest alignment. **Sbx Route 4** runs north/south with a northern terminal station at Foothill Boulevard. The alignment follows Euclid Avenue south and services the Ontario Metrolink Station and Ontario Transcenter. The route continues south on Euclid where it crosses Holt Avenue and Corridor 6, and continues through Ontario and Chino where it connects with Corridor 7 Grand/Edison Avenue to a southern terminal station at SR-71. This 12 mile alignment includes 14 transit stations and three park-and-ride lots. One of the stations is an optional station subject to elimination depending on the model-generated ridership potential.

Corridor 5: San Bernardino Avenue

There are two east/west routes that are being studied to provide BRT service between the western and eastern portions of the San Bernardino Valley: the northern strip that includes Corridors 2 and 3; and the southern strip that includes Corridors 5 and 6. Corridor 5 is centered along San Bernardino Avenue from the South Fontana Transit Center to the western boundary of the E Street Corridor. This corridor is generally bounded by Randall Avenue on the north and Interstate 10 on the south. Major activity centers include the Arrowhead Regional Medical Center and the Fontana Kaiser Hospital.

Potential Alignment

Three alignment alternatives are available to connect Corridor 5 to destinations in the E Street Corridor (Corridor 1). The three Corridor 5 alignments studied include alignments connecting Corridor 5 to downtown San Bernardino; to the Hospitality Lane commercial area; and to the city of Loma Linda. All three alignments use a western terminal station at the South Fontana Transfer Center and travel east on San Bernardino Avenue through the city of Rialto. The routes then transition via Pepper Avenue to Valley Boulevard to La Cadena Drive before diverting to different destinations.

sbX Route 5 is the highest performing route heads east on Valley Boulevard, north on Mount Vernon Avenue, diverts north on Mount Vernon Avenue and east on Rialto Avenue to the planned downtown San Bernardino Transcenter and E Street sbX. This 11 mile alignment includes 12 transit stations and one park-and-ride lot. Five of the stations studied are optional stations that are subject to elimination depending on the model-generated ridership potential.

An alternative route heads east on Valley Boulevard, north on Mount Vernon Avenue, then east on Fairway Drive to Hospitality Lane where it connects with the E Street sbX. From Hospitality Lane the route turns north on Tippecanoe Avenue to a terminal station at the Tippecanoe Avenue Redlands Rail Station. This alignment includes 16 transit stations and one park-and-ride lot. Five of the stations studied are optional stations and three of the stations are also used by the E Street sbX (Corridor 1).

The last alternative route diverts south on La Cadena Avenue, east on M Street, south on Mount Vernon Avenue, east on Washington Street to Barton Road where it connects with the E Street sbX before transitioning north on California Avenue to a terminal at the California Avenue Station of the Redlands Rail line. This alignment includes 18 transit stations and three park-and-ride lots. Nine of the stations studied are optional stations four of the stations are also used by the extended E Street sbX (Corridor 1A).

Corridor 6: Holt Avenue/4th Street

This corridor starts at the Pomona Transcenter in Los Angeles County. Centered along Holt Avenue and 4th Street, the corridor runs from Pomona through Ontario and on to the South Fontana Transcenter. This corridor also Connects the north/south corridors of Corridor 4 Mountain/Euclid Avenues and Corridor 10 Haven Avenue. Besides the transit centers mentioned above and Ontario International Airport (ONT), major activity centers in this corridor include the Ontario Convention Center, Ontario Mills Mall and the Ontario Transit Center. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area, into Los Angeles County.

Potential Alignment

sbX Route 6 is an east/west BRT route with a western terminal station at the Pomona Transcenter in Los Angeles County. This route follows Holt Avenue through the cities of Montclair and Ontario to Ontario International Airport where it heads north on Archibald Avenue to Inland Empire Boulevard east and then north on Milliken to east on 4th Street into the city of Fontana where 4th Street changes names to San Bernardino Avenue and the South Fontana Transit Center. This 19 mile alignment (the longest alignment studied here) includes 18 transit stations and three park-and-ride lots. Three of the stations are optional stations, subject to elimination depending on the model-generated ridership potential.

Corridor 7: Grand/Edison Avenues

This east-west corridor is essential to connect the future developments in the Agricultural preserves areas with Chino/Chino Hills and possible inter-county transit connections to Los Angeles and Riverside Counties. A likely point of connection will be from the civic center in Chino Hills.

This east-west strip south of State Route 60 in the western section of the Valley serves the planned growth of the agricultural preserve areas of Chino and Ontario. Significant development is planned for the preserve areas with over 100,000 new residents expected within 20 years. Activity centers include the Chino Community Hospital, the Chino Civic Center, and the Chino Transfer Center. This corridor crosses Corridor 4, Mountain/Euclid Avenues and Corridor 10, Haven Avenue. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area into Riverside County.

Potential Alignment

sbX Route 7 is an east/west BRT route with a western terminal station at the Chino Hills Civic Center. This route follows Grand Avenue across SR-71, heads north on Pipeline Avenue, east on Chino Avenue, and south on Central Avenue before continuing east on Edison Ave through the agricultural preserve areas of Chino and Ontario. This alignment eventually heads south via Milliken Avenue and to Limonite Avenue and the Limonite Shopping center in Riverside County where a terminal station is located. This 16 mile alignment includes 15 transit stations and three park-and-ride lots. Two of the stations are optional stations, subject to elimination depending on ridership potential.

Corridor 8: Sierra Avenue

This new north/south corridor, not analyzed in the previous system-wide plan, lies entirely within the City of Fontana, serving the Fontana Metrolink Station, South Fontana Transfer Center, and Kaiser Hospital.

Potential Alignment

sbX Route 8 is a north/south BRT route with a northern terminal station at a park-and-ride lot near Interstate 15. This route follows Sierra Avenue through Fontana to a southern terminal station at Kaiser Hospital. This 7 mile alignment (the shortest alignment studied) includes 7 transit stations and three park-and-ride lots. The alignment serves as a spine connecting all four Cross Valley Corridors on Foothill Boulevard and San Bernardino Avenue. Two of the stations are optional stations, subject to elimination depending on ridership potential.

Corridor 9: Riverside Avenue

This north/south corridor, not analyzed in the previous system-wide plan, lies primarily within the City of Rialto, extending south into Riverside County and the City of Riverside. This corridor serves the Rialto Metrolink Station and the RTA Downtown Terminal in Riverside. This corridor is one of three corridors studied that extends beyond the Omnitrans coverage area, into Riverside County.

Potential Alignment

sbX Route 9 is a north/south BRT route with a northern terminal station at a park-and-ride lot near Interstate 15 and Sierra Avenue. This route follows Riverside Avenue Southwest and then south through the city of Rialto and then across the Riverside County line where Riverside Avenue Changes Names to Main Street to the RTA Downtown Terminal in Riverside. This Corridor connects with Corridor 2, foothill Boulevard East and Corridor 5, San Bernardino Avenue. This 16 mile alignment includes 15 transit stations and three park-and-ride lots. Several of the stations are optional, subject to elimination depending on ridership potential.

Corridor 10: Haven Avenue

This north/south corridor, not analyzed in the original system-wide plan, lies within the Cities of Rancho Cucamonga, Ontario and Chino. This corridor serves Chaffey College at the northern Terminus, the Rancho Cucamonga and the East Ontario Metrolink Station, the Terra Vista Town center, the Ontario airport and would end at Edison Avenue where it joins sbX Route 7.

Potential Alignment

sbX Route 10 is a north/south BRT route with a northern terminal station at the park-and-ride lot at Chaffey College north of Interstate 210. This route follows Haven Avenue south, past the Terra Vista Shopping Center and Corridor 3 Foothill Boulevard West, with a connection at the Rancho Cucamonga Metrolink Station and into Ontario. In the city of Ontario it connects to Corridor 6, Holt

Avenue/4th Street and then south to the East Ontario Metrolink Station to Edison Avenue where it connects to Corridor 7 Grand/Edison Avenue. The 10.4 mile corridor has 9 stops, park-and-ride lots and two connections to Metrolink lines.

Additional Transit Services

In addition, this alternative would introduce new express bus service from park-and ride lots to key destinations. Express buses would use the HOV lanes along freeways such as I-10 and I-215. An initial route could operate from the park-and-ride at I-10/Yucaipa Blvd. to San Bernardino. The following Rail Corridors are included in this alternative:

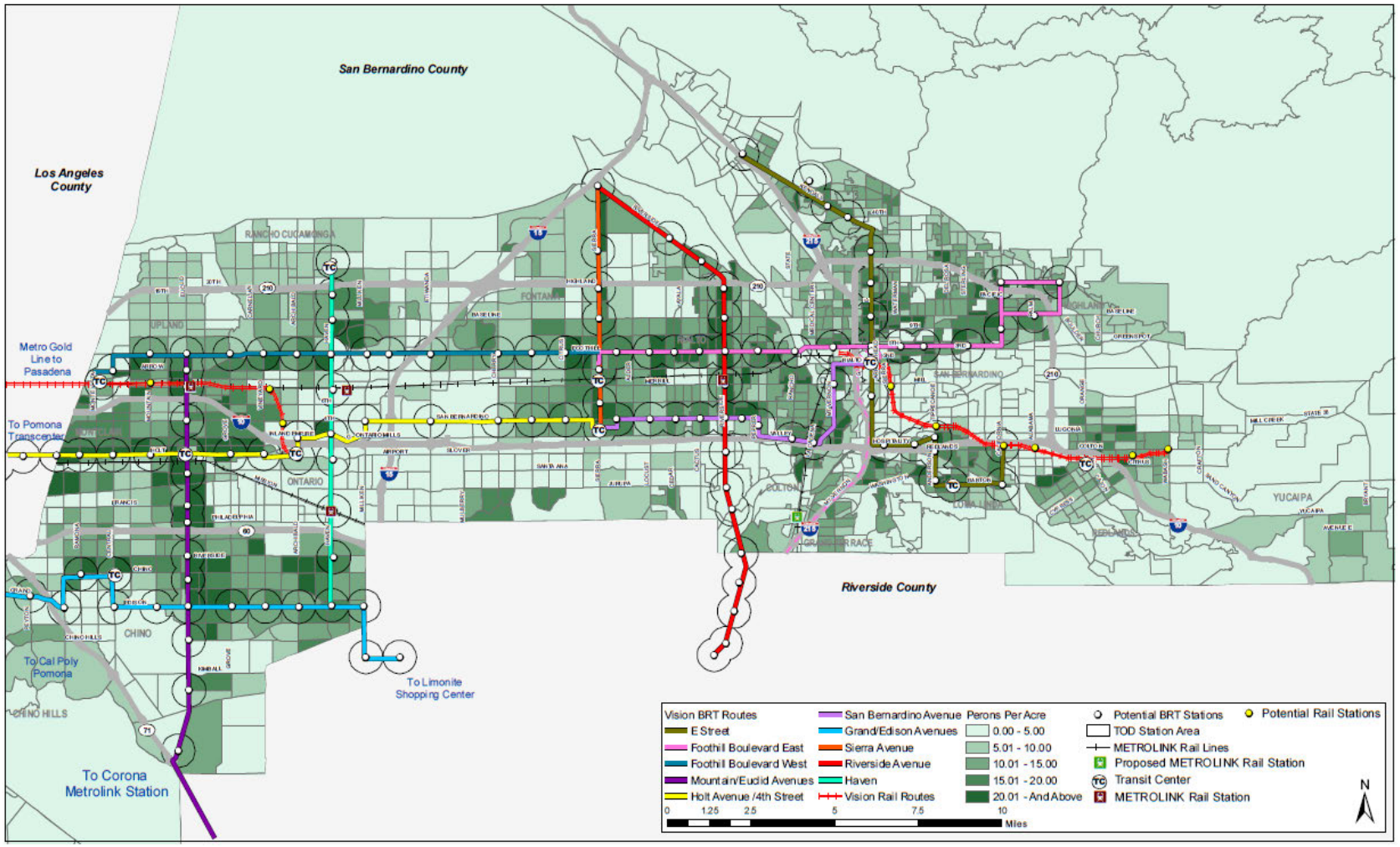
- Redlands Rail Line Extension from Redlands to Mentone. This would require getting an easement from the MWD.
- Gold Line extension from Montclair to Ontario Airport.
- High Speed Rail connecting Los Angeles to San Diego with a station at the Ontario airport.
- Maglev connecting Anaheim to Las Vegas with a station at the Ontario Airport and a Station in Victorville.
- Aerial Tram to Big Bear from Highland would provide an alternative to the resort area of big bear then the current Highways 18 and 38.

The analysis of the Vision Alternative began by coding all transit routes in the Omnitrans system with high service frequencies – 5-minute headways for BRT services and 15-minute peak period headways for local services. Iterative model runs (equilibration) were used to fine tune the headways to provide cost-effective service with high seating probability throughout the system.

5.5 2035 Sustainable Land Use Alternative

In order to estimate the potential effect of SB 375 and the potential for transit-oriented development, the LRTP is also analyzing the 2035 Vision alternative using a modified land use not regionally adopted. The transportation networks for the Sustainable Land Use Alternative are identical to the networks studied for the Vision Alternative, as described in Section 5.4 above. This allows the analysis of the Sustainable Land Use Alternative to identify the magnitude of transportation demand impacts that can be directly attributed to land use changes.

Using the regionally adopted land use forecast prepared by SANBAG, the LRTP has reassigned some of the projected growth of each city into ¼ mile station catchment areas. Station areas were increased in density by a maximum of 5 DU/Ac, and 10 Employees per acre. This resulted in an increase of 35-40% of planned growth moved into station areas. Figure 5-4, showing the Sustainable land Use Alternative, displays circles showing the walk area of a ½ mile around BRT stations where the higher density development would be encouraged to increase the potential transit ridership of this alternative. Figures 5-10 and 5-11 display the results of this effect.



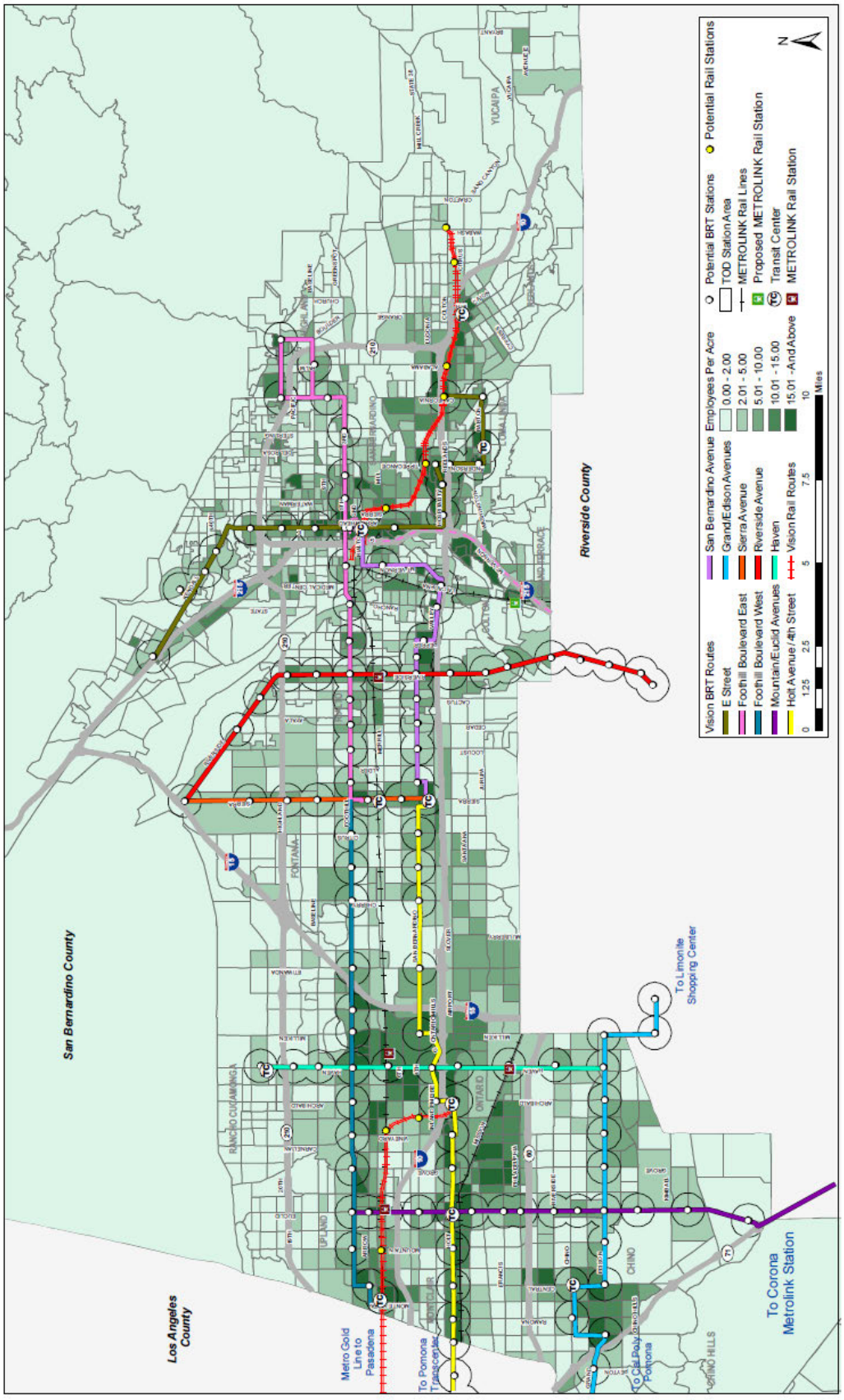
VISION Sustainable Population Density Year 2035

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the San Bernardino Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 5-10: Sustainable Population Density Year 2035



Source: Parsons, 2009.

Figure 5-11: Sustainable Employment Density Year 2035

Chapter 6 Evaluation of Alternatives

This chapter begins with a description of existing regional transit plans and planning projects that are under study. These plans form the basis for the four future transit alternatives that are analyzed in the Long Range Transit Plan. The four alternatives are then analyzed for to be able to assess the ridership benefits of different levels of transit investment in the San Bernardino Valley. The four future transit alternatives include:

- The Baseline Alternative, which includes existing transit services;
- The Plan Alternative, which includes an increase in coverage and service frequency designed to serve the future growth in the region;
- The Vision Alternative, which includes an investment in a higher level of transit services – BRT and rail – in the region; and
- The Sustainable Land Use Alternative, which redistributes population and employment growth to transit corridors, allowing us to study the potential ridership benefits of public policy efforts to shape the transit/land use connection in the region.

6.1 Evaluation Methodology

By definition, each alternative studied provides a higher level of transit service than previous alternatives. The evaluation process will be used to quantify the ridership impacts of each subsequent alternative. Finally, capital costs and operating costs will be estimated to quantify the relative costs of the alternatives.

Several service standards are used by Omnitrans to judge the quality of service. Some of these standards are subject to the definition of the alternative, such as the standards for span of service, minimum service frequency and bus stop spacing. Other standards can be quantified from an analysis of the ridership impacts to judge the relative performance of the alternatives. The following service standards will be used to compare the alternatives:

- Route coverage – 85% of population should be located within ½ mile of bus stops;
- Vehicle loadings –
  - 120% of seating capacity during peak periods;
  - 100% of seating capacity during off-peak periods;
- Ridership levels –
  - Tier 1 routes: 30+ boardings per vehicle hour;
  - Tier 2 & 3 routes: 15-20 boardings per vehicle hour.

6.2 Model Results for Transit Alternatives

Base Alternative

The Year 2035 Base Alternative provides an idea of how the existing transit service would be used in the future if no service improvements were made to account the rapidly growing population in the San Bernardino Valley. Table 6-1 provides a summary of the Base Alternative transit ridership on each of the Omnitrans routes. This table shows that the Omnitrans bus routes in the Base Alternative will carry over 61,000 riders in the Year 2035. This

Table 6-1: Year 2035 Base Alternative Transit Ridership Forecast

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
1	Local Bus	Colton-Del Rosa	15	15	4,464
2	Local Bus	Cal State-E St-Loma Linda	15	15	5,559
3	Local Bus	Baseline-Highland-San Bernardino	20	20	5,423
5	Local Bus	Cal State-Del Rosa-Downtown SB	30	30	1,674
7	Local Bus	N San Bern-Sierra-Downtown SB	30	60	1,127
8	Local Bus	San Bernardino-Mentone-Yucaipa	60	60	1,562
9	Local Bus	San Bernardino-Redlands-Yucaipa	60	60	1,811
10	Local Bus	Fontana-Baseline-San Bernardino	30	30	1,989
11	Local Bus	San Bernardino-Muscoy	30	30	1,091
14	Local Bus	Fontana-Foothill-San Bernardino	15	15	4,278
15	Local Bus	Fontana-Rialto-SB-Highlands-Redlands	30	30	4,458
19	Local Bus	Redlands-Colton-Fontana	30	30	3,608
20	Local Bus	Fontana-Metrolink	30	30	270
22	Local Bus	S Rialto-N Rialto	30	30	1,701
29	Local Bus	Fontana-Cedar-N Rialto	60	60	124
61	Local Bus	Fontana-Ontario-Pomona	15	15	6,514
63	Local Bus	Chino-Ontario-Upland	30	30	1,385
65	Local Bus	Montclair-Chino Hills	30	30	1,987
66	Local Bus	Fontana-Foothill-Montclair	15	30	2,336
67	Local Bus	Montclair-Baseline-Fontana	60	60	1,133
68	Local Bus	Chino-Montclair-Chaffey	30	30	2,799
80	Local Bus	Montclair-Ontario-Chaffey	30	30	1,607
81	Local Bus	Ontario-Ont. Mills-Chaffey	60	60	930
82	Local Bus	Rancho-Fontana-Sierra Lakes	60	60	1,111
83	Local Bus	Upland-Euclid-Chino	30	60	1,265
215	Express Bus	San Bernardino-Riverside Express	30	30	1,180
Total					61,386

Source: Hexagon, 2009.

represents a 25 percent increase over current ridership levels. This ridership increase is significantly less than the forecast population growth of 38 percent over the same time frame.

In the Year 2035 Base Alternative only 69 percent of the future population will be located within walking distance of a bus stop, as compared to 80 percent of the existing population with existing service. The coverage provided by the Base Alternative is significantly lower than existing coverage due to the population growth forecast for areas that are currently undeveloped and not served by transit.

Table 6-2 provides a summary of system-wide performance and productivity measures for the Base Alternative. While the overall productivity of the system increases from 24 to 29 passengers per hour of service, this productivity increase is accompanied by an increase in average vehicle loadings and the number of trips that exceed the maximum passenger load standard.

Table 6-2: Year 2035 Base Alternative Omnitrans Performance Measures

	Local Bus	BRT	System Total
Peak Vehicles	139	-	139
Off-Peak Vehicles	127	-	127
Spare Vehicles	28	-	28
Total Fleet	167	-	167
Vehicle Miles Traveled	32,100	-	32,100
Vehicle Hours Traveled	2,100	-	2,100
Daily Riders	61,400	-	61,400
Passenger Miles	263,000	-	263,000
Riders per Vehicle Hour	29.2	-	29.2
Average Load	8.2	-	8.2
Average Speed	15.3	-	15.3

Source: Hexagon, 2009.

Performance standard summary:

- Route coverage – 69% of population located within ½ mile of bus stops – does not meet standard;
- Vehicle loadings –
  - 35% of routes have maximum load exceeding 120% of seating capacity during peak periods;
  - 10% of routes have maximum load exceeding 100% of seating capacity during off-peak periods;
  - does not meet standard;
- Ridership levels –
  - Tier 1 routes: 36 boardings per vehicle hour –meets standard;
  - Tier 2 & 3 routes: 29 boardings per vehicle hour – exceeds standard (ridership warrants service increase).

Plan Alternative

The Year 2035 Plan Alternative tests an enhanced transit system where coverage is improved and service frequencies are increased. Table 6-3 provides a summary of the Plan Alternative transit ridership on each of the Omnitrans routes. This table shows that the Omnitrans bus routes in the Plan Alternative will carry over 109,000 riders in the Year 2035. This represents a 79 percent increase over Base Alternative ridership levels. This ridership forecast indicates that there is a very large potential for increased transit ridership if coverage, accessibility, and service frequency are improved.

In the Year 2035 Plan Alternative 83 percent of the future population will be located within walking distance of a bus stop. This figure is an improvement over the current value of 80 percent with existing service and existing population. The coverage provided by the Plan Alternative provides a significant improvement over the Base Alternative due to the introduction of service to areas that are currently undeveloped and not served by transit.

Table 6-3: Year 2035 Plan Alternative Transit Ridership Forecast

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
301	BRT	E Street sbX	5	10	8,686
1	Local Bus	Colton-Del Rosa	10	15	4,974
2	Local Bus	Cal State-E St-Loma Linda	20	30	1,757
3	Local Bus	Baseline-Highland-SB-Yucaipa	30	60	2,809
4	Local Bus	Baseline-Highland-San Bernardino	15	20	5,684
5	Local Bus	Cal State-Del Rosa-Downtown SB	30	30	1,366
7	Local Bus	N San Bern-Sierra-Downtown SB	15	30	2,234
8	Local Bus	San Bernardino-Mentone-Yucaipa	15	30	3,626
9	Local Bus	San Bernardino-Redlands-Yucaipa	20	30	2,983
10	Local Bus	Fontana-Baseline-San Bernardino	10	20	4,019
11	Local Bus	San Bernardino-Muscoy	30	30	1,073
14	Local Bus	Fontana-Foothill-San Bernardino	10	15	5,322
15	Local Bus	Fontana-Rialto-SB-Highlands-Redlands	10	15	10,379
19	Local Bus	Redlands-Colton-Fontana	15	15	6,802
22	Local Bus	S Rialto-N Rialto	15	20	2,792
61	Local Bus	Fontana-Ontario-Pomona	10	20	7,963
63	Local Bus	Chino-Ontario-Upland	30	30	1,660
65	Local Bus	Montclair-Chino Hills	15	30	4,085
66	Local Bus	Fontana-Foothill-Montclair	15	20	3,827
67	Local Bus	Montclair-Baseline-Fontana	15	30	2,880
68	Local Bus	Chino-Montclair-Chaffey	15	30	4,418
80	Local Bus	Montclair-Ontario-Chaffey	20	30	2,463
81	Local Bus	Ontario-Ont. Mills-Chaffey	60	60	402
82	Local Bus	Rancho-Fontana-Sierra Lakes	20	30	2,506
83	Local Bus	Upland-Euclid-Chino	15	30	2,515
84	Local Bus	San Bernardino Street E/W Corridor	60	60	352
85	Local Bus	Mountain Avenue N/S Corridor	20	30	2,281
86	Local Bus	Chino-Ontario (Riverside/Milliken)	60	60	697
87	Local Bus	Francis Avenue E/W Corridor	60	0	157
88	Local Bus	Edison Avenue E/W Corridor	30	60	1,257
89	Local Bus	Haven Avenue N/S Corridor	20	60	1,761
93	Local Bus	Cherry Avenue N/S Corridor	60	0	190
94	Local Bus	Cedar/Ayala N/S Corridor	30	60	823
95	Local Bus	Santa Ana Avenue E/W Corridor	60	0	313
96	Local Bus	Sierra Avenue N/S Corridor	30	30	989
97	Local Bus	Chino-Industry Metrolink	60	0	214
98	Local Bus	Yucaipa-Beaumont	30	30	748
99	Local Bus	Palm/Alabama N/S Corridor	30	60	528
215	Express Bus	San Bernardino-Riverside Express	15	30	1,733
Total					109,268

Source: Hexagon, 2009.

Table 6-4 provides a summary of system-wide performance and productivity measures for the Plan Alternative. With the equilibration of the service frequencies in the Plan Alternative, the overall productivity of the system decreases from 30 to 29 passengers per hour of service. This productivity decrease is accompanied by a significant improvement in the average vehicle loadings and the number of trips that exceed the maximum passenger load standard.

Performance standard summary:

- Route coverage – 83% of population located within ½ mile of bus stops – Almost meets standard;
- Vehicle loadings –
  - 5% of routes have maximum load exceeding 120% of seating capacity during peak periods;
  - 2% of routes have maximum load exceeding 100% of seating capacity during off-peak periods;
  - Almost meets standard;
- Ridership levels –
  - Tier 1 routes: 31 boardings per vehicle hour –meets standard;
  - Tier 2 & 3 routes: 17 boardings per vehicle hour – meets standard.

Vision Alternative

The Year 2035 Vision Alternative tests a transit system where local bus routes are replaced by faster, higher capacity BRT services in ten corridors in the San Bernardino Valley. Table 6-5 provides a summary of the Vision Alternative transit ridership on each of the Omnitrans routes. This table shows that the Omnitrans bus routes in the Vision Alternative will carry almost 133,000 riders in the Year 2035. This represents a 21 percent increase over Plan Alternative ridership levels. Over 53,000 of the transit riders in this alternative use BRT routes. This ridership forecast indicates that there is a significant potential for increased transit ridership if vehicle speeds and service frequency are improved in key corridors.

Table 6-4: Year 2035 Plan Alternative Omnitrans Performance Measures

	Local Bus	BRT	System Total
Peak Vehicles	304	21	325
Off-Peak Vehicles	187	10	197
Spare Vehicles	61	5	66
Total Fleet	365	26	391
Vehicle Miles Traveled	59,100	4,300	63,400
Vehicle Hours Traveled	3,690	230	3,920
Daily Riders	100,600	8,700	109,300
Passenger Miles	449,000	34,000	483,000
Riders per Vehicle Hour	27.3	37.8	27.9
Average Load	7.6	7.9	7.6
Average Speed	16.0	18.7	16.2

Source: Hexagon, 2009.

Table 6-5: Year 2035 Vision Alternative Transit Ridership Forecast

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
301	BRT	E Street sbX Redlands Extension	5	10	10,458
302	BRT	Foothill East sbX	5	10	8,485
303	BRT	Foothill West sbX - Foothill	10	15	4,628
304	BRT	Euclid sbX	10	15	5,504
305	BRT	San Bernardino Avenue sbX - San Bernardino	10	10	5,305
306	BRT	Holt/Fourth sbX	10	15	5,977
307	BRT	Grand/Edison sbX	10	20	2,123
308	BRT	Sierra sbX	10	20	1,561
309	BRT	Riverside sbX	10	10	6,360
310	BRT	Haven sbX	10	15	2,946
1	Local Bus	Colton-Del Rosa	10	15	4,280
2	Local Bus	Cal State-E St-Loma Linda	20	30	1,809
3	Local Bus	Baseline-Highland-SB-Yucaipa	60	60	2,136
4	Local Bus	Baseline-Highland-San Bernardino	20	20	4,817
5	Local Bus	Cal State-Del Rosa-Downtown SB	20	30	1,928
7	Local Bus	N San Bern-Sierra-Downtown SB	20	30	1,843
8	Local Bus	San Bernardino-Mentone-Yucaipa	15	30	3,567
9	Local Bus	San Bernardino-Redlands-Yucaipa	30	30	2,272
10	Local Bus	Fontana-Baseline-San Bernardino	15	30	2,741
11	Local Bus	San Bernardino-Muscoy	30	30	1,127
14	Local Bus	Fontana-Foothill-San Bernardino	20	20	1,747
15	Local Bus	Fontana-Rialto-SB-Highlands-Redlands	10	15	9,874
19	Local Bus	Redlands-Colton-Fontana	20	20	5,043
22	Local Bus	S Rialto-N Rialto	20	30	1,442
61	Local Bus	Fontana-Ontario-Pomona	20	30	3,316
63	Local Bus	Chino-Ontario-Upland	30	30	1,760
65	Local Bus	Montclair-Chino Hills	15	30	3,055
66	Local Bus	Fontana-Foothill-Montclair	20	30	1,837
67	Local Bus	Montclair-Baseline-Fontana	20	30	2,333
68	Local Bus	Chino-Montclair-Chaffey	20	30	3,229
80	Local Bus	Montclair-Ontario-Chaffey	15	30	3,274
81	Local Bus	Ontario-Ont. Mills-Chaffey	60	60	363
82	Local Bus	Rancho-Fontana-Sierra Lakes	20	30	2,922
83	Local Bus	Upland-Euclid-Chino	30	30	844
84	Local Bus	San Bernardino Street E/W Corridor	30	60	652
85	Local Bus	Mountain Avenue N/S Corridor	20	30	1,847
86	Local Bus	Chino-Ontario (Riverside/Milliken)	30	60	980
87	Local Bus	Francis Avenue E/W Corridor	60	60	317
88	Local Bus	Edison Avenue E/W Corridor	30	30	1,225
89	Local Bus	Haven Avenue N/S Corridor	30	30	828
91	Local Bus	Vineyard/Carnelian N/S Corridor	60	0	112
93	Local Bus	Cherry Avenue N/S Corridor	30	60	632
94	Local Bus	Cedar/Ayala N/S Corridor	20	30	1,714
95	Local Bus	Santa Ana Avenue E/W Corridor	60	0	257

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
96	Local Bus	Sierra Avenue N/S Corridor	30	60	578
97	Local Bus	Chino-Industry Metrolink	30	60	487
98	Local Bus	Yucaipa-Beaumont	30	30	746
99	Local Bus	Palm/Alabama N/S Corridor	60	60	839
215	Express Bus	San Bernardino-Riverside Express	30	60	563
BRT Sub-total					53,347
System Total					132,683

Source: Hexagon, 2009.

In the Year 2035 Vision Alternative 83 percent of the future population will be located within walking distance of a bus stop. This figure is identical to the coverage for the Plan Alternative because these two alternatives share common bus stop locations. As with the Plan Alternative, the coverage for the Vision Alternative represents an improvement over the current value of 80 percent with existing service and existing population.

Table 6-6 provides a summary of system-wide performance and productivity measures for the Vision Alternative. With the equilibration of the service frequencies in the Vision Alternative, the overall productivity of the system is maintained at 29 passengers per hour of service.

Performance standard summary:

- Route coverage – 83% of population located within ½ mile of bus stops – almost meets standard;
- Vehicle loadings –
  - 4% of routes have maximum load exceeding 120% of seating capacity during peak periods;
  - 0% of routes have maximum load exceeding 100% of seating capacity during off-peak periods;
  - Almost meets standard;
- Ridership levels –
  - Tier 1 routes: 32 boardings per vehicle hour –meets standard;
  - Tier 2 & 3 routes: 17 boardings per vehicle hour – meets standard.

Table 6-6: Year 2035 Vision Alternative Omnitrans Performance Measures

	Local Bus	BRT	System Total
Peak Vehicles	256	120	376
Off-Peak Vehicles	176	70	246
Spare Vehicles	52	25	77
Total Fleet	308	145	453
Vehicle Miles Traveled	52,900	29,000	81,900
Vehicle Hours Traveled	3,290	1,420	4,710
Daily Riders	84,300	53,300	137,600
Passenger Miles	332,000	247,000	579,000
Riders per Vehicle Hour	25.6	37.5	29.2
Average Load	6.3	8.5	7.1
Average Speed	16.1	20.4	17.4

Source: Hexagon, 2009.

Sustainable Land Use Alternative

The Year 2035 Sustainable Land Use Alternative tests the impacts of a significant redistribution of the future growth in the San Bernardino Valley. Table 6-7 provides a summary of the Sustainable Land Use Alternative transit ridership on each of the Omnitrans routes. This table shows that the Omnitrans bus routes in the Sustainable Land Use Alternative will carry almost 144,000 riders in the Year 2035. This represents an 8 percent increase over Vision Alternative ridership levels. Over 62,000 of the transit riders in this alternative use BRT routes, which represents a 17 percent increase over Vision Alternative BRT ridership. This ridership forecast indicates that there is a significant potential for increased transit ridership in the San Bernardino Valley if the nature of future development can be controlled.

Table 6-7: Year 2035 Sustainable Land Use Alternative Transit Ridership Forecast

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
301	BRT	E Street sbX Redlands Extension	5	10	12,165
302	BRT	Foothill East sbX	5	10	10,192
303	BRT	Foothill West sbX - Foothill	10	15	5,557
304	BRT	Euclid sbX	10	15	6,508
305	BRT	San Bernardino Avenue sbX - San Bernardino	10	10	6,420
306	BRT	Holt/Fourth sbX	10	15	6,770
307	BRT	Grand/Edison sbX	10	20	2,386
308	BRT	Sierra sbX	10	20	1,893
309	BRT	Riverside sbX	10	10	7,342
310	BRT	Haven sbX	10	15	3,361
1	Local Bus	Colton-Del Rosa	10	15	4,427
2	Local Bus	Cal State-E St-Loma Linda	20	30	2,065
3	Local Bus	Baseline-Highland-SB-Yucaipa	60	60	2,097
4	Local Bus	Baseline-Highland-San Bernardino	20	20	4,764
5	Local Bus	Cal State-Del Rosa-Downtown SB	20	30	1,959
7	Local Bus	N San Bern-Sierra-Downtown SB	20	30	1,866
8	Local Bus	San Bernardino-Mentone-Yucaipa	15	30	3,573
9	Local Bus	San Bernardino-Redlands-Yucaipa	30	30	2,256
10	Local Bus	Fontana-Baseline-San Bernardino	15	30	2,695
11	Local Bus	San Bernardino-Muscoy	30	30	1,101
14	Local Bus	Fontana-Foothill-San Bernardino	20	20	1,996
15	Local Bus	Fontana-Rialto-SB-Highlands-Redlands	10	15	9,915
19	Local Bus	Redlands-Colton-Fontana	20	20	5,095
22	Local Bus	S Rialto-N Rialto	20	30	1,527
61	Local Bus	Fontana-Ontario-Pomona	20	30	3,775
63	Local Bus	Chino-Ontario-Upland	30	30	1,787
65	Local Bus	Montclair-Chino Hills	15	30	3,591
66	Local Bus	Fontana-Foothill-Montclair	20	30	2,015
67	Local Bus	Montclair-Baseline-Fontana	20	30	2,331
68	Local Bus	Chino-Montclair-Chaffey	20	30	3,138
80	Local Bus	Montclair-Ontario-Chaffey	15	30	3,090

Route	Type	Description	Headway		Riders
			Peak	Off-peak	
81	Local Bus	Ontario-Ont. Mills-Chaffey	60	60	381
82	Local Bus	Rancho-Fontana-Sierra Lakes	20	30	2,887
83	Local Bus	Upland-Euclid-Chino	30	30	955
84	Local Bus	San Bernardino Street E/W Corridor	30	60	657
85	Local Bus	Mountain Avenue N/S Corridor	20	30	1,876
86	Local Bus	Chino-Ontario (Riverside/Milliken)	30	60	948
87	Local Bus	Francis Avenue E/W Corridor	60	60	285
88	Local Bus	Edison Avenue E/W Corridor	30	30	1,381
89	Local Bus	Haven Avenue N/S Corridor	30	30	874
91	Local Bus	Vineyard/Carnelian N/S Corridor	60	0	112
93	Local Bus	Cherry Avenue N/S Corridor	30	60	558
94	Local Bus	Cedar/Ayala N/S Corridor	20	30	1,573
95	Local Bus	Santa Ana Avenue E/W Corridor	60	0	274
96	Local Bus	Sierra Avenue N/S Corridor	30	60	614
97	Local Bus	Chino-Industry Metrolink	30	60	573
98	Local Bus	Yucaipa-Beaumont	30	30	760
99	Local Bus	Palm/Alabama N/S Corridor	60	60	823
215	Express Bus	San Bernardino-Riverside Express	30	60	543
BRT Sub-total					62,594
System Total					143,731

Source: Hexagon, 2009.

In the Year 2035 Vision Plan Alternative 85 percent of the future population will be located within walking distance of a bus stop. This figure is higher than the coverage for the Plan and Vision Alternatives because much of the population growth in the Sustainable Land Use Alternative is redistributed to BRT station areas.

Table 6-8 provides a summary of system-wide performance and productivity measures for the Sustainable Land Use Alternative. With the service frequencies maintained from the Vision Alternative, the overall productivity of the system increases from 29 to 31 passengers per hour of service.

Table 6-8: Year 2035 Sustainable Land Use Alternative Omnitrans Performance Measures

	Local Bus	BRT	System Total
Peak Vehicles	256	120	376
Off-Peak Vehicles	176	70	246
Spare Vehicles	52	25	77
Total Fleet	308	145	453
Vehicle Miles Traveled	52,900	29,000	81,900
Vehicle Hours Traveled	3,290	1,420	4,710
Daily Riders	86,100	62,600	148,700
Passenger Miles	357,000	294,000	651,000
Riders per Vehicle Hour	26.2	44.1	31.6
Average Load	6.7	10.1	7.9
Average Speed	16.1	20.4	17.4

Source: Hexagon, 2009.

Performance standard summary:

- Route coverage – 85% of population located within ½ mile of bus stops –meets standard;
- Vehicle loadings –
  - 4% of routes have maximum load exceeding 120% of seating capacity during peak periods;
  - 0% of routes have maximum load exceeding 100% of seating capacity during off-peak periods;
  - Almost meets standard;
- Ridership levels –
  - Tier 1 routes: 35 boardings per vehicle hour –meets standard;
  - Tier 2 & 3 routes: 18 boardings per vehicle hour – meets standard.

6.3 Comparison of Alternatives

All Four Alternatives are compared according to three sets of criteria: Omnitrans Performance Measures; Fleet Expansion and Capital Costs; and Operating and Maintenance Costs.

Omnitrans Performance Measures

As Omnitrans is the local transit provider in the San Bernardino Valley comparing the alternatives has a direct impact on Omnitrans service and operation requirements. The performance statistics documented here display the results of the equilibration efforts described earlier in this chapter.

Table 6-9 presents a summary comparison of Omnitrans fixed-route system-wide performance measures for the four alternatives. The four alternatives range in vehicle requirements and total fleet size from 167 vehicles in the Base Alternative, up to 391 vehicles in the Plan Alternative and 453 vehicles in the Vision and Sustainable Alternatives. Other service measures (VMT and VHT) exhibit similar growth through the alternatives. Ridership statistics (riders and passenger miles) increase along with service growth for the Plan and Vision Alternatives. Additional ridership growth is associated with the development changes in the Sustainable Land Use Alternative.

Fleet Expansion and Capital Costs

Table 6-10 presents a summary comparison of the Omnitrans fixed-route fleet expansion programs for the Base, Plan and Vision alternatives. These expansion programs assume that the fleet expansion will be constrained for the next five years, due to existing funding constraints, and that fleet expansion in the Plan and Vision Alternatives will begin in Year 2014 and continue at a rapid pace through the Year 2035. The replacement schedule for both standard and BRT vehicles assumes a 12-year lifespan for each vehicle.

Table 6-11 presents a summary comparison of capital costs for Omnitrans fleet expansion for the Base, Plan and Vision Alternatives. All tables display the capital costs in constant Year 2009 dollars, and bus costs are assumed to be $517,000 for standard coaches and $998,000 for articulated coaches for BRT service. This table shows that the total cost for vehicle purchase will almost double from $182 million in the Base Alternative to $343 million in the Plan Alternative. Under the Vision Alternative the total cost for vehicle purchases will be $473 million, almost 40 percent higher than in the Plan Alternative.

Table 6-9: Comparison of Alternatives for Omnitrans Performance Measures

	Base Alt.	Plan Alt.	Vision Alt.	Sustainable Alt.
Peak Vehicles	139	325	376	376
Off-Peak Vehicles	127	197	246	246
Spare Vehicles	28	66	77	77
Total Fleet	167	391	453	453
Vehicle Miles Traveled	32,100	63,400	81,900	81,900
Vehicle Hours Traveled	2,100	3,920	4,710	4,710
Daily Riders	61,400	109,300	137,600	148,700
Passenger Miles	263,000	483,000	579,000	651,000
Riders per Vehicle Hour	29.2	27.9	29.2	31.6
Average Load	8.2	7.6	7.1	7.9
Average Speed	15.3	16.2	17.4	17.4
Annual Riders	18,911,000	33,664,000	42,381,000	45,800,000

Source: Hexagon, 2009.

Table 6-10: Fleet Expansion Plans for Alternatives

	2009	2014	2020	2025	2030	2035
Base Alternative						
Standard Bus						
Peak	139	139	139	139	139	139
Off-Peak	127	127	127	127	127	127
Spare	28	28	28	28	28	28
Total Standard	167	167	167	167	167	167
Replacement		70	84	70	70	70
Expansion		0	0	0	0	0
Total Standard Purchase		70	84	70	70	70
Total Fleet	167	167	167	167	167	167
Total Purchase		70	84	70	70	70
Plan Alternative						
Standard Bus						
Peak	139	134	169	205	249	304
Off-Peak	127	122	138	153	169	187
Spare	28	27	34	42	50	61
Total Standard	167	161	203	247	299	365
Replacement		64	84	67	85	103
Expansion		0	42	44	52	66
Total Standard Purchase		64	126	111	137	169
BRT Bus						
Peak	0	11	11	11	21	21
Off-Peak	0	7	7	7	10	10
Spare	0	3	3	3	5	5
Total BRT Bus	0	14	14	14	26	26
Replacement		0	0	14	0	0
Expansion		14	0	0	12	0
Total BRT Bus Purchase		14	0	14	12	0
Total Fleet	167	175	217	261	325	391
Total Purchase		78	126	125	149	169

	2009	2014	2020	2025	2030	2035
Vision Alternative						
Standard Bus						
Peak	139	134	161	188	219	256
Off-Peak	127	122	135	147	160	176
Spare	28	27	33	38	44	52
Total	167	161	194	226	263	308
Replacement		64	84	67	81	94
Expansion		0	33	32	37	45
Total Standard Purchase		64	117	99	118	139
BRT Bus						
Peak	0	11	32	59	93	120
Off-Peak	0	7	19	34	54	70
Spare	0	3	7	12	19	25
Total	0	14	39	71	112	145
Replacement		0	0	14	16	30
Expansion		14	25	32	41	33
Total BRT Bus Purchase		14	25	46	57	63
Total Fleet	167	175	233	297	375	453
Total Purchase		78	142	145	175	202

Source: Hexagon, 2009.

Table 6-11: Omnitrans Fleet Replacement and Expansion Capital Costs for Alternatives

	2010 – 2015	2016 – 2020	2021 – 2025	2026 - 2030	2031 - 2035	2010-2035 Total
Base Alternative						
Total Standard Purchase	84	70	70	70	70	364
Fixed Cost ($M 2009) [1]	$43.43	$36.19	$36.19	$36.19	$36.19	$188.19
Other Costs	$71.2	$59.3	$59.3	$59.3	$59.3	$308.4
Plan Alternative						
Total Standard Purchase	79	111	111	137	169	607
Fixed Cost ($M 2009)[1]	$40.84	$57.39	$57.39	$70.83	$87.37	$313.82
Total BRT Bus Purchase	14	0	14	12	0	40
Fixed Cost ($M 2009)[2]	$13.97	$0.00	$13.97	$11.97	$0.00	$39.90
Total Fixed Cost	$54.81	$57.39	$71.35	$82.80	$87.37	$353.72
Other Costs	$67.9	$85.8	$103.3	$102.6	$197.8	$482.9
Vision Alternative						
Total Standard Purchase	77	104	99	118	139	537
Fixed Cost ($M 2009)[1]	$39.81	$53.77	$51.18	$61.01	$71.86	$277.63
Total BRT Bus Purchase	14	25	46	57	63	205
Fixed Cost ($M 2009)[2]	$13.97	$24.94	$45.89	$56.86	$62.84	$204.49
Total Fixed Cost	$53.77	$78.71	$97.07	$117.86	$134.71	$482.12
Other Costs	$66.6	$81.3	$95.5	$110.3	$141.3	$495.0

[1]Assumes replacement cost of $517,000 per standard bus.
[2]Assumes cost of $998,000 per BRT vehicle.
Source: Hexagon, 2009.

This table also includes an estimate of other capital costs that are likely to be incurred through the year 2035. These other capital costs include the costs for preventive maintenance, non-service vehicles, Transcenter construction, facility upgrades and security elements that are currently funded by capital funding sources. These elements are projected as a function of the vehicle capital costs, and reflect the higher capital costs that will be required to maintain a larger vehicle fleet.

Table 6-12 presents a summary of capital costs for BRT projects in the Vision Alternative. The cost estimates include capital costs that are subject to possible FTA New Starts/Small Starts funding. These costs include running way, stations, and full fleet requirement for the year 2035, not just the opening year fleet requirement. The costs in Table 6-12 don't account for replacement costs for BRT vehicles after their 12 year lifespan. Replacement vehicle costs are covered in Table 6-11.

The capital cost estimates are allocated to potential BRT projects using the capital cost estimates for the E Street BRT project as a basis. The total cost estimate for the E Street Corridor Project between Palm Station in northern San Bernardino and the VA Hospital in Loma Linda is $170 million (in Year 2009 dollars). The E Street Project includes 5.3 miles of exclusive guideway along a 15.7 mile alignment, with 16 stations and 11 vehicles in peak service. The E Street capital cost estimate is used to allocate costs for other BRT projects, based on the relative alignment lengths, and numbers of stations and peak vehicles in service.

Table 6-12 shows that the total capital cost for the ten BRT corridors under study in the Vision Alternative will amount to over $1.67 billion in Year 2009 dollars.

Table 6-13 presents a summary comparison of capital costs for major transit investments in the San Bernardino Valley that vary for the Base, Plan and Vision Alternatives. This table is in a preliminary form that will require further research to refine the cost estimates and timing for several of the capital cost elements. The Base Alternative includes only

Table 6-12: Capital Costs for BRT Corridors in Vision Alternative

sbX Corridor	Description	Length (mi)	Stations	Peak Vehicles	Capital Costs
1	E Street Corridor (to California)	18.3	16	24	$235.0
2	Foothill Boulevard East	16.6	16	21	$214.5
3	Foothill Boulevard West	16.2	15	10	$165.5
4	Euclid Avenue to Corona	17.9	14	12	$179.3
5	San Bernardino Avenue	11.0	12	7	$118.7
6	Holt Avenue/4th Street	20.4	18	13	$207.6
7	Grand/Edison Avenues	17.4	16	11	$178.7
8	Sierra Avenue	7.6	7	5	$78.7
9	Riverside Avenue	16.4	16	11	$173.6
10	Haven Avenue	10.4	10	7	$109.4
	Total	152.2	140	121	$1,661.1

Source: Hexagon, 2009.

Table 6-13: Total Capital Costs for Alternatives

	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010-2035 Total
Base Alternative						
Omnitrans Fleet	$43.43	$36.19	$36.19	$36.19	$36.19	$188.19
ADA Fleet *	$11.25	$13.50	$11.25	$11.25	$11.25	$58.50
Omnitrans Other Costs	$71.2	$59.3	$59.3	$59.3	$59.3	$308.4
Metrolink Strategic	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Base Alternative Total	$125.88	$108.99	$106.74	$106.74	$106.74	$555.09
Plan Alternative						
Omnitrans Fleet (exclude NS)	$40.84	$57.39	$71.35	$70.83	$87.37	$327.78
ADA Fleet *	$11.25	$13.50	$11.25	$11.25	$11.25	$58.50
Omnitrans Other Costs	$67.9	$85.8	$103.3	$102.6	$197.8	$482.9
BRT Corridor New Starts	$170.65	$0.00	$0.00	$36.00	$0.00	$206.65
Redlands Rail	$0.00	$240.00	$0.00	$0.00	$0.00	$240.00
Gold Line	$0.00	$50.00	$0.00	$0.00	$0.00	$50.00
Metrolink Extension	$0.00	$40.00	$0.00	$0.00	$0.00	$40.00
Metrolink Strategic	$120.00	$110.00	$0.00	$0.00	$0.00	$230.00
Plan Alternative Total	$410.65	$596.69	$185.90	$220.68	$296.42	$1,635.84
Vision Alternative						
Omnitrans Fleet (exclude NS)	$39.81	$53.77	$65.15	$76.97	$101.79	$337.48
ADA Fleet *	$11.25	$13.50	$11.25	$11.25	$11.25	$58.50
Omnitrans Other Costs	$66.6	$81.3	$95.5	$110.3	$141.3	$495.0
BRT Corridor New Starts	$170.65	$375.70	$375.70	$375.70	$375.70	$1,673.45
Redlands Rail	$0.00	$240.00	$0.00	$0.00	$0.00	$240.00
Gold Line	$0.00	$50.00	$100.00	$100.00	$0.00	$250.00
Metrolink Extension	$0.00	$40.00	$0.00	$0.00	$0.00	$40.00
Metrolink Strategic	$120.00	$110.00	$0.00	$0.00	$0.00	$230.00
Vision Alternative Total	$408.31	$964.27	$647.60	$674.22	$630.04	$3,324.43

*Assumes 90 vehicle fleet size and 4-year life span for ADA vehicles with $100,000 replacement cost.

Source: Hexagon, 2009.

the $555 million cost for replacement of standard coaches for Omnitrans fixed-route services, and other capital costs associated with the current fleet. The Plan Alternative adds the costs of expanding the Omnitrans fixed-route services, plus introduction of the E Street sbX BRT service, the Redlands Rail Commuter Rail service, MTA Gold Line extension to Montclair, Metrolink extension from the Santa Fe Depot to the San Bernardino Transit Station, and funding elements of the SCRRA for the 2015 and 2020 A Scenarios. These projects will increase the capital cost burden of the Plan Alternative to over $1.1 billion dollars over the next 26 years.

The Vision Alternative adds the costs of completing a system of ten BRT corridors, and extending the MTA Gold Line to Ontario Airport. These projects will increase the capital cost burden of the Vision Alternative to almost $3.3 billion over the next 26 years.

Operating Costs

Tables 6-14 through 6-16 present operating and maintenance cost summaries for the Base, Plan and Vision Alternatives. These tables display the gross operating cost estimates for six representative years from 2009 to 2035, before accounting for farebox recovery revenue. The operating cost estimates are calculated as function of the total vehicle hours of service operated by each service component in the alternative.

Operating and maintenance costs for the Base Alternative are summarized in Table 6-14. This alternative includes the provision of Omnitrans fixed-route services, Omnitrans ADA services (Omnilink and Access), and Metrolink services. The costs for Omnitrans services are derived from Omnitrans' Year 2009 operating plan and budget. The cost of Metrolink services includes only San Bernardino County's share of the total Metrolink costs, based on the Year 2009-2010 SCRRA budget. Table 6-14 shows that the O&M cost of the Base Alternative will remain constant into future years.

Operating and maintenance costs for the Plan Alternative are summarized in Table 6-15. This alternative includes the provision of Omnitrans fixed-route, BRT and ADA services, Metrolink, Redlands Rail and Metro Gold Line (to Montclair) services. The O&M cost of Metrolink service include the implementation of the Extension of Metrolink services to the San Bernardino Transit Center and implementation of the Metrolink Strategic Plan. The cost of Redlands Rail services are based on preliminary operating plans and cost estimates for the Redlands Rail Alternatives Analysis. The cost of Metro Gold Line services includes only San Bernardino County's share of the planned Gold Line extension into San Bernardino County, with operating unit costs based on recent MTA documentation. Table 6-15 shows that the yearly O&M cost of the Plan Alternative will increase steadily from less than $90 million in Year 2009 to more than $170 million in 2035.

Operating and maintenance costs for the Vision Alternative are summarized in Table 6-16. This alternative includes the provision of Omnitrans fixed-route, BRT and ADA services, Metrolink, Redlands Rail and Metro Gold Line (to Ontario Airport) services. Table 6-16 shows that the O&M cost of the Vision Alternative will increase steadily from less than $90 million in Year 2009 to more than $207 million in 2035.

Table 6-17 presents a summary of net O&M costs for the Base, Plan and Vision Alternatives. This table uses constant farebox recovery ratios to convert gross O&M costs to net O&M costs for each of the systems in the alternatives. The farebox recovery ratios are based on recently collected data. The data in Table 6-17 shows that the net O&M costs for the Plan and Vision Alternatives would increase by 90 percent and 130 percent, respectively, from current levels.

Table 6-18 presents a summary comparison of system-wide O&M costs aggregated to different time periods through the year 2035. This table shows that the total net O&M cost burden for the Base Alternative through the year 2035 will be approximately $1.62 billion, as compared to $2.35 billion for the Plan Alternative and $ 2.63 billion for the Vision Alternative.

Table 6-14: Gross Operating and Maintenance Costs for Base Alternative

	2009	2014	2020	2025	2030	2035
Omnitrans - Standard Bus						
Annual VHT	646,800	646,800	646,800	646,800	646,800	646,800
Annual O&M Cost ($M)	$57.03	$57.03	$57.03	$57.03	$57.03	$57.03
Omnitrans - ADA Vehicle						
Annual VHT	164,900	164,900	164,900	164,900	164,900	164,900
Annual O&M Cost ($M)	$10.90	$10.90	$10.90	$10.90	$10.90	$10.90
Metrolink *						
Annual VHT	48,950	48,950	48,950	48,950	48,950	48,950
Annual O&M Cost ($M)	$21.54	$21.54	$21.54	$21.54	$21.54	$21.54
Total O&M Costs ($M)	$89.47	$89.47	$89.47	$89.47	$89.47	$89.47

*San Bernardino County share of total.

Source: Hexagon, 2009.

Table 6-15: Gross Operating and Maintenance Costs for Plan Alternative

	2009	2014	2020	2025	2030	2035
Omnitrans - Standard Bus						
Annual VHT	646,800	622,200	736,100	850,100	979,400	1,136,500
Annual O&M Cost ($M)	$57.03	$54.87	$64.91	$74.96	$86.36	$100.22
Omnitrans - BRT Bus						
Annual VHT	0	30,600	43,100	43,100	70,800	70,800
Annual O&M Cost ($M)	$0.00	$3.91	$3.80	$3.80	$6.24	$6.24
Omnitrans - ADA Vehicle						
Annual VHT	164,900	164,900	164,900	164,900	164,900	164,900
Annual O&M Cost ($M)	$10.90	$10.90	$10.90	$10.90	$10.90	$10.90
Metrolink *						
Annual VHT	48,950	74,809	92,015	92,015	92,015	92,015
Annual O&M Cost ($M)	$21.54	$32.92	$40.49	$40.49	$40.49	$40.49
Redlands Rail						
Annual VHT	0	0	20,400	20,400	20,400	20,400
Annual O&M Cost ($M)	$0.00	$0.00	$9.18	$9.18	$9.18	$9.18
MTA Gold Line *						
Annual VHT	0	0	8,400	8,400	8,400	8,400
Annual O&M Cost ($M)	$0.00	$0.00	$3.19	$3.19	$3.19	$3.19
Total O&M Costs	$89.47	$102.60	$132.47	$142.52	$156.36	$170.22

*San Bernardino County share of total.

Source: Hexagon, 2009.

Table 6-16: Gross Operating and Maintenance Costs for Vision Alternative

	2009	2014	2020	2025	2030	2035
Omnitrans - Standard Bus						
Annual VHT	646,800	622,200	714,600	800,800	896,300	1,013,300
Annual O&M Cost ($M)	$57.03	$54.87	$63.01	$70.61	$79.04	$89.35
Omnitrans - BRT Bus						
Annual VHT	0	30,600	117,000	212,500	335,700	437,400
Annual O&M Cost ($M)	$0.00	$3.91	$10.32	$18.74	$29.60	$38.57
Omnitrans - ADA Vehicle						
Annual VHT	164,900	164,900	164,900	164,900	164,900	164,900
Annual O&M Cost ($M)	$10.90	$10.90	$10.90	$10.90	$10.90	$10.90
Metrolink *						
Annual VHT	48,950	74,809	92,015	92,015	92,015	92,015
Annual O&M Cost ($M)	$21.54	$32.92	$40.49	$40.49	$40.49	$40.49
Redlands Rail						
Annual VHT	0	0	20,400	20,400	20,400	20,400
Annual O&M Cost ($M)	$0.00	$0.00	$9.18	$9.18	$9.18	$9.18
MTA Gold Line *						
Annual VHT	0	0	8,400	8,400	49,000	49,000
Annual O&M Cost ($M)	$0.00	$0.00	$3.19	$3.19	$18.62	$18.62
Total O&M Costs	$89.47	$102.60	$137.09	$153.11	$187.83	$207.11

*San Bernardino County share of total.
Source: Hexagon, 2009.

Table 6-17: Net Operating and Maintenance Costs for Alternatives (SANBAG Costs in $M 2009)

	Farebox Recovery	2009	2014	2020	2025	2030	2035
Base Alternative							
Omnitrans - Standard Bus	24%	$43.40	$43.40	$43.40	$43.40	$43.40	$43.40
Omnitrans - ADA Vehicle	12%	$9.59	$9.59	$9.59	$9.59	$9.59	$9.59
Metrolink *	57%	$9.35	$9.35	$9.35	$9.35	$9.35	$9.35
Total Net O&M Costs		$62.34	$62.34	$62.34	$62.34	$62.34	$62.34
Plan Alternative							
Omnitrans - Standard Bus	24%	$43.40	$41.76	$49.40	$57.04	$65.72	$76.27
Omnitrans - BRT Bus	24%	$0.00	$2.98	$2.89	$2.89	$4.75	$4.75
Omnitrans - ADA Vehicle	12%	$9.59	$9.59	$9.59	$9.59	$9.59	$9.59
Metrolink *	57%	$9.35	$14.29	$17.57	$17.57	$17.57	$17.57
Redlands Rail	25%	$0.00	$0.00	$6.89	$6.89	$6.89	$6.89
MTA Gold Line	15%	$0.00	$0.00	$2.71	$2.71	$2.71	$2.71
Total Net O&M Costs		$62.34	$68.61	$89.05	$96.70	$107.23	$117.78
Vision Alternative							
Omnitrans - Standard Bus	24%	$43.40	$41.76	$47.95	$53.73	$60.15	$68.00
Omnitrans - BRT Bus	24%	$0.00	$2.98	$7.85	$14.26	$22.53	$29.35

	Farebox Recovery	2009	2014	2020	2025	2030	2035
Omnitrans - ADA Vehicle	12%	$9.59	$9.59	$9.59	$9.59	$9.59	$9.59
Metrolink *	57%	$9.35	$14.29	$17.57	$17.57	$17.57	$17.57
Redlands Rail	25%	$0.00	$0.00	$6.89	$6.89	$6.89	$6.89
MTA Gold Line	15%	$0.00	$0.00	$2.71	$2.71	$15.83	$15.83
Total Net O&M Costs		$62.34	$68.61	$92.57	$104.76	$132.55	$147.22

*Recovery ratio includes other operating revenue.

Source: Hexagon, 2009.

Table 6-18: Total Operating and Maintenance Costs for Alternatives

	2010 - 2015	2016 - 2020	2021- 2025	2026- 2030	2031- 2035	2010- 2035
Base Alternative						
Gross O&M Costs	$536.82	$447.35	$447.35	$447.35	$447.35	$2,326.22
Net O&M Costs	$374.04	$311.70	$311.70	$311.70	$311.70	$1,620.84
Plan Alternative						
Gross O&M Costs	$589.34	$602.61	$692.50	$754.12	$823.38	$3,461.95
Net O&M Costs	$399.12	$404.37	$468.19	$515.08	$567.79	$2,354.56
Vision Alternative						
Gross O&M Costs	$589.34	$616.47	$733.51	$869.71	$996.99	$3,806.02
Net O&M Costs	$399.12	$414.92	$499.40	$607.17	$706.77	$2,627.38

Source: Hexagon, 2009.

Chapter 7 Victor Valley Transit Alternatives

7.1 Victor Valley Transit Authority

Victor Valley Transit Authority (VVTA) is a Joint Powers Authority (JPA) established in 1991 and comprised of five jurisdictions; the cities of Adelanto, Hesperia, and Victorville, the town of Apple Valley, and several unincorporated areas of San Bernardino County including Phelan, Pinon Hills, Wrightwood, Lucerne Valley, Helendale, and Oro Grande. The Board of Directors of the Victor Valley Transit Authority includes representatives from the above jurisdictions, who contract out management and operations.

VVTA is the second largest transit operator in San Bernardino County and operates 18 local fixed routes with a mixed fleet of 38 buses. The local bus routes include eight core bus routes that connect at least two major activity centers, seven circulator (or deviation) routes that connect sparsely populated neighborhoods to the core routes, and three remote routes that connect remote unincorporated areas to the heart of the Victor Valley cities.

The eighteen fixed bus routes currently operated by VVTA are summarized in Tables 7-1 and 7-2. Table 7-1 displays the type of service, service frequency, and number of peak vehicles used on each route. Table 7-2 summarizes the cities and activity centers served by each route. The city of Victorville is served by 12 routes; the city of Hesperia and the town of Apple Valley are each served by five routes; and the city of Adelanto is served by three routes. Buses operate from 6:00 a.m. to 9:00 p.m. Monday through Friday and from 7:00 a.m. to 8:00 p.m. on Saturday. There is no Sunday service. In addition to the 18 fixed-route schedules, VVTA operates a fleet of 27 cutaway vehicles for ADA Complementary paratransit bus services for the Victor Valley Area. Additional deviated service to Wrightwood, Pinon Hills, Phelan, Helendale, and Lucerne Valley is available by reservation.

The most recent comprehensive analysis of transit service in the Victor Valley is documented in *Operations and Growth Analysis – Victor Valley Transit Authority – Draft Final Report* (March 2007). This data resource shows that, in 2006, VVTA fixed route service carried approximately 3,300 daily transit riders. Significant system-wide performance statistics from this report include: 1.07 average boardings per vehicle mile and 17.3 average boardings per vehicle hour. The average mode share for fixed route transit is less than 0.15% of total trips in the Victor Valley. By comparison, the average mode share in the San Bernardino Valley is 0.77%.

The VVTA system is designed primarily to provide reliable coverage to a sparsely populated area. GIS estimates show that over 80 percent of the Victor Valley population is within one-quarter mile of a VVTA bus route. Almost all of the local fixed routes operated by VVTA are less than 12 miles in length which allows them to operate at 60 minute headways, thus allowing each route to be served by a single vehicle while providing easy to use clock-face service.

Table 7-1: Existing VVTA Transit Routes

Route	Description	Type	Miles	2009 Headway			Peak Vehicles
				AM	Mid	PM	
21	Tri-Community	County	33.2	90	90	90	2
22	Helendale	County	48.1	120	120	120	1
23	Lucerne Valley	County	50.7	90	90	90	1
31	Adelanto-Victorville	Core	17.8	60	60	60	2
32	Adelanto-Victorville North	Core	20.6	60	60	60	1
33	Adelanto Circulator	Circulator	25.0	60	60	60	1
40	Apple Valley North	Circulator	15.1	60	60	60	1
41	Apple Valley/Victorville	Core	23.7	60	60	60	2
43	Apple Valley/Victor Valley College	Core	17.8	60	30	30	2
44	Victor Valley Mall/Hesperia	Core	28.5	60	60	60	2
45	Victorville/Hesperia	Core	47.9	30	30	30	3
46	Hesperia Deviation	Circulator	11.4	60	60	60	1
47	Apple Valley South Deviation	Circulator	11.7	60	60	60	1
48	Hesperia West	Circulator	20.0	60	60	60	1
51	Victorville Circulator	Circulator	11.6	60	60	60	1
52	Victorville/Mall	Circulator	17.3	60	60	60	1
53	Victor Valley College/Mall	Core	14.7	60	30	30	3
54	Victorville West	Circulator	15.4	60	60	60	1
Total Vehicles							27

Source: Hexagon, 2009.

Table 7-2: VVTA Transit Route Service Areas

Cities	VVTA Route														
	31	32	33	40	41	43	44	45	46	47	48	51	52	53	54
Adelanto	x	x	x												x
Apple Valley				x	x	x									
Hesperia						x	x	x	x	x	x			x	
Victorville	x	x			x		x	x				x	x	x	
Activity Centers															
Adelanto City Hall		x	x												
Apple Valley City Hall				x	x										
Apple Valley High School						x				x					
Apple Valley Post Office				x	x	x				x					
Desert Valley Hospital								x						x	
Hesperia High School							x				x				
Hesperia Post Office							x		x		x				
Mall of Victor Valley							x						x	x	
Rite Aid	x	x			x			x				x	x		
Saint Mary's Hospital					x										
SCLA		x													
Silverado High School	x														x
Sultana High School							x		x						
Victor Valley Community College						x	x	x						x	
Victor Valley Hospital					x							x			
Victor Valley Transit Center					x							x			
Victorville City Hall	x												x		

Source: Hexagon, 2009.

Transit service into the San Bernardino Valley is currently provided by Greyhound Lines. SANBAG and VVTA have implemented a ticket subsidy program that provides discounted fares for trips from Victor Valley into San Bernardino Valley and into Barstow.

7.2 Existing Activity Centers

Seven major activity centers are used to anchor the core transit routes in the existing VVTA transit network. These include Adelanto City Hall, Apple Valley Post Office, Hesperia Post Office, Mall of Victor Valley, 7th and Lorene (Rite Aid), Victor Valley College, and Victor Valley Transit Center.

The Mall of Victor Valley, located on Bear Valley Road in Victorville is one of the largest regional shopping centers between San Bernardino and Las Vegas. The mall is anchored by major department stores and serves as a major trip generator for VVTA. Bear Valley Road east of I-15 includes the largest concentration of strip-mall and big-box retail uses in the surrounding area, and this commercial area is continuing to intensify. Additionally, there are multiple shopping centers and strip malls that offer shopping and dining options.

The Victor Valley Community College, located off Bear Valley Road, generates many trips, as well as the various high schools dispersed around the valley.

With more than 200 physicians and surgeons, the Victor Valley area provides many medical facilities, clinics, and hospitals. The largest of these are Desert Valley Medical Center, St. Mary Regional Medical Center and Victor Valley Community Hospital. Desert Valley Hospital is located on the campus of Prime Care Desert Valley Medical Center on Bear Valley Road. St. Mary's Hospital in Apple Valley is located on Kasota Road, just off Highway 18; and Victor Valley Community Hospital is located on Eleventh Street in Victorville.

7.3 Existing Demographics

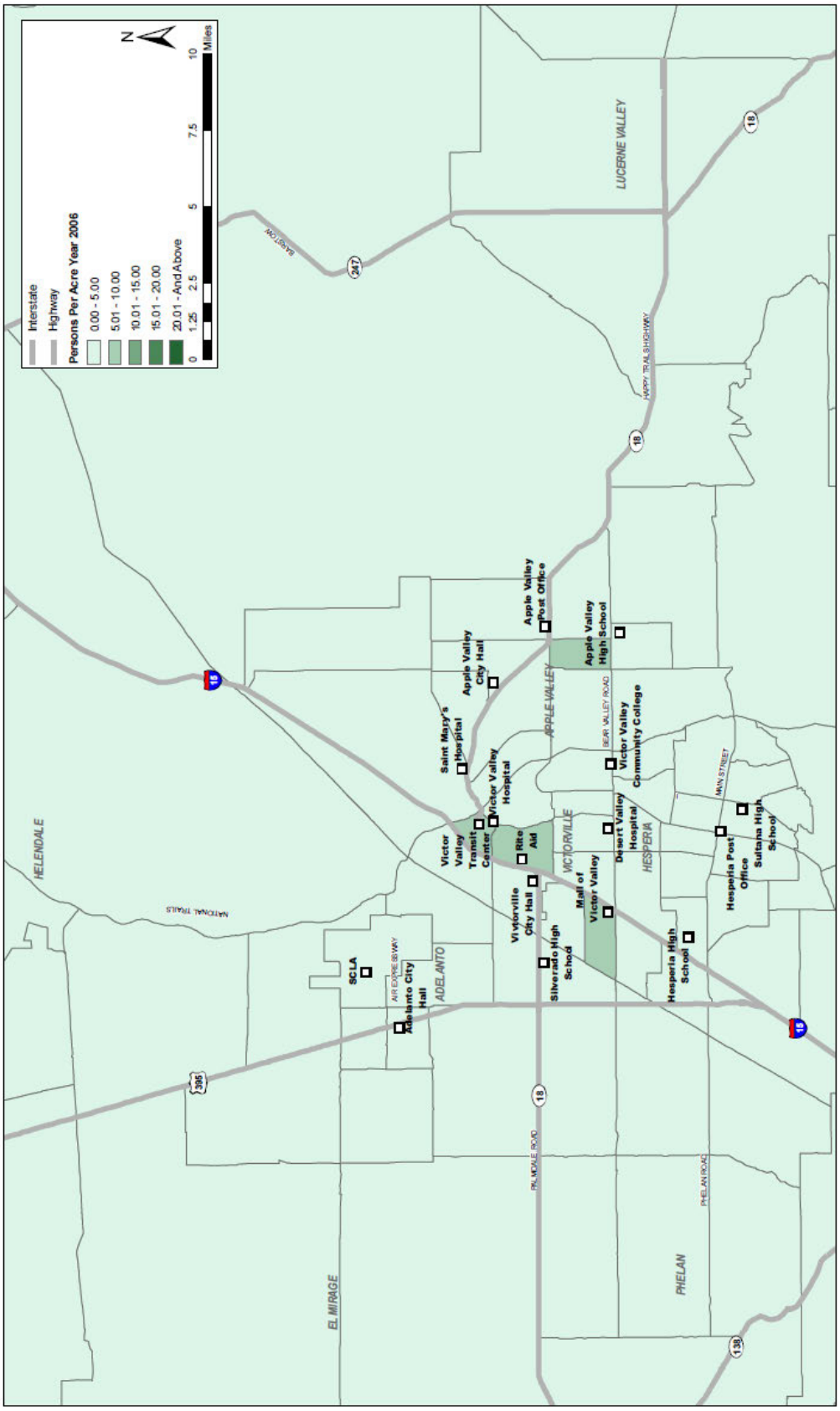
The socioeconomic data is derived from the SCAG RTP, aggregated to 60 TAZ in the Victor Valley. The population and employment for the individual cities in the Victor Valley is displayed in Table 7-3.

The Victor Valley currently has very low density development that is not conducive to efficient high-capacity transit service. The average existing population density in the Victor Valley cities is approximately 1.6 persons per acre, as compared to 5.2 persons per acre in the San Bernardino Valley. The existing population and employment densities for the TAZ in the Victor Valley are displayed graphically in Figures 7-1 and 7-2, respectively.

Table 7-3: Victor Valley Population and Employment

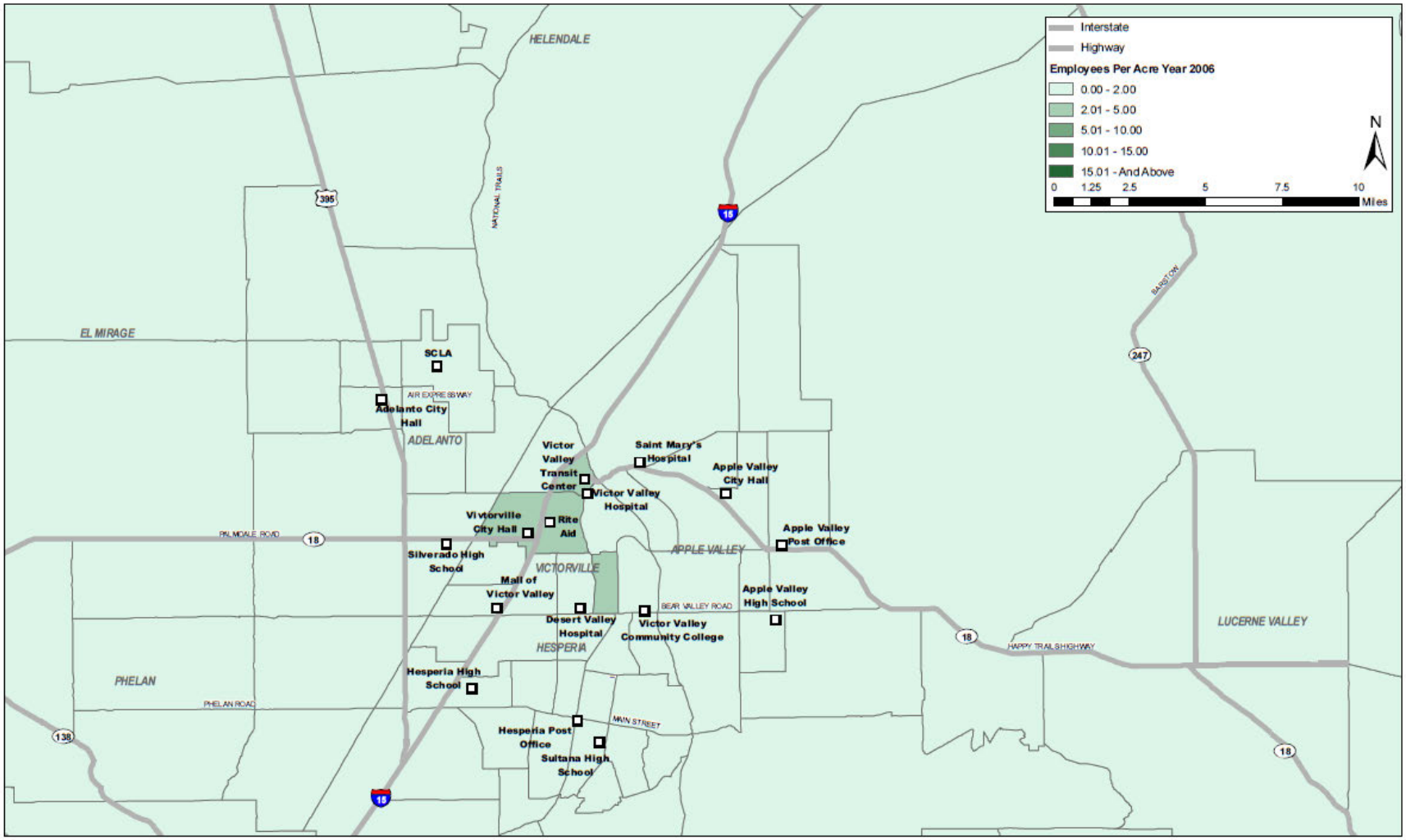
City	2005 Population	2005 Employment
Adelanto City	24,156	5,125
Apple Valley Town	65,760	12,488
Hesperia City	78,284	14,934
Victorville City	90,913	31,425
Total Victor Valley	259,113	63,972

Source: SCAG, 2009.



Source: Parsons, 2009.

Figure 7-1: Victor Valley Existing Population Density



VVTA Existing Employent Density

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the Victor Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 7-2: Victor Valley Existing Employment Density

7.4 Planned Development Projects

The Victor Valley region is a pro-growth region that has experienced rapid development during the last economic growth cycle. It is expected that the pro-growth attitude will continue once favorable economic conditions return. Growth in the area has been characterized by low-density development, however to comply with SB 375 it is expected that any future growth take into consideration the Vehicle Miles Traveled (VMT) generated.

Southern California Logistics Airport (SCLA)

By far, the largest generator of economic activity in the Victor Valley region is anticipated to be the Southern California Logistics Airport (SCLA). SCLA encompasses some 5,000 acres and, according to plans, when it is built out it will accommodate up to 6,000 employees. Currently, there are 60 tenants on the airport site. Some of the uses that either now or will occur on this site are expected to include:

- Air cargo services
- Aviation maintenance
- Military Defense Programs
- Flight Testing
- Advanced Flight Training
- Charter Passenger Service
- Business & Executive Jet Travel Center
- Warehousing and logistics
- Automotive and manufacturing support
- Rail distribution
- Office and other commercial development
- Foreign trade zone
- Real Estate Development

According to the SCAG 2030 Regional Transportation Plan, air cargo activity at the airport will rise to 81,000 tons by 2010. There are currently over 100 businesses housed at SCLA. The majority of these activities are in the warehousing, logistics activities and aviation related activities. Current employment is estimated at around 2,500. SCLA is currently undergoing construction and will operate a warehousing and distribution complex containing 64 million square feet of space.

At present, there is no commercial passenger service originating from SCLA. While the primary function of this airport will continue to be air cargo and other aviation related activity, there will also be some modest demand for passenger service however Ontario International Airport will still primarily serve travel needs. Almost none of the demand for this airport will originate from outside the Mojave desert. In order to accommodate this service, this airport is planned for a new passenger terminal facility, passenger parking, ground access improvements and ramp improvements. With a 2030 forecast of 4 million annual passengers, the airport would be similar to current passenger activity at Reno/Tahoe International Airport.

7.5 Travel Demand Forecasting and Future Conditions

The Victor Valley Transit Alternatives were tested using the San Bernardino Valley Focus Model (see Chapter 4). The Victor Valley portion of this model was calibrated to existing conditions using current transit routes and recently collected transit ridership data. This model maintains the SCAG zone system in the Vector Valley area, which is less refined than the focus zone system in the San Bernardino Valley. This zone system is sufficient for testing the ridership and operational impacts of core transit routes in the VVTA system.

As shown in Table 7-4, the Victor Valley is forecast to experience rapid growth in the next three decades. The existing population of less than 300,000 is forecasts to grow to over 600,000 by the year 2035. The year 2035 population and employment densities for the TAZ in the Victor Valley are displayed graphically in Figures 7-3 and 7-4, respectively.

In spite of this growth spurt, the overall level of density in the Victor Valley will remain relatively low. The population density for the Victor Valley cities is expected to grow from its current level of 1.6 persons per acre to approximately 3.4 persons per acre in the year 2035, as compared to an existing population density of 5.2 persons per acre in the San Bernardino Valley.

7.6 Development of Transit Alternatives

As it is currently structured, the VVTA system is designed primarily to provide reliable coverage to a sparsely populated area (the average population density in the Victor Valley is only 1.6 persons per acre). The existing Core Transit routes operated by VVTA are typically less than 12 miles in length which allows them to operate at 60 minute headways. These core routes are supplemented by several circulators and deviated routes to provide coverage to populated areas.

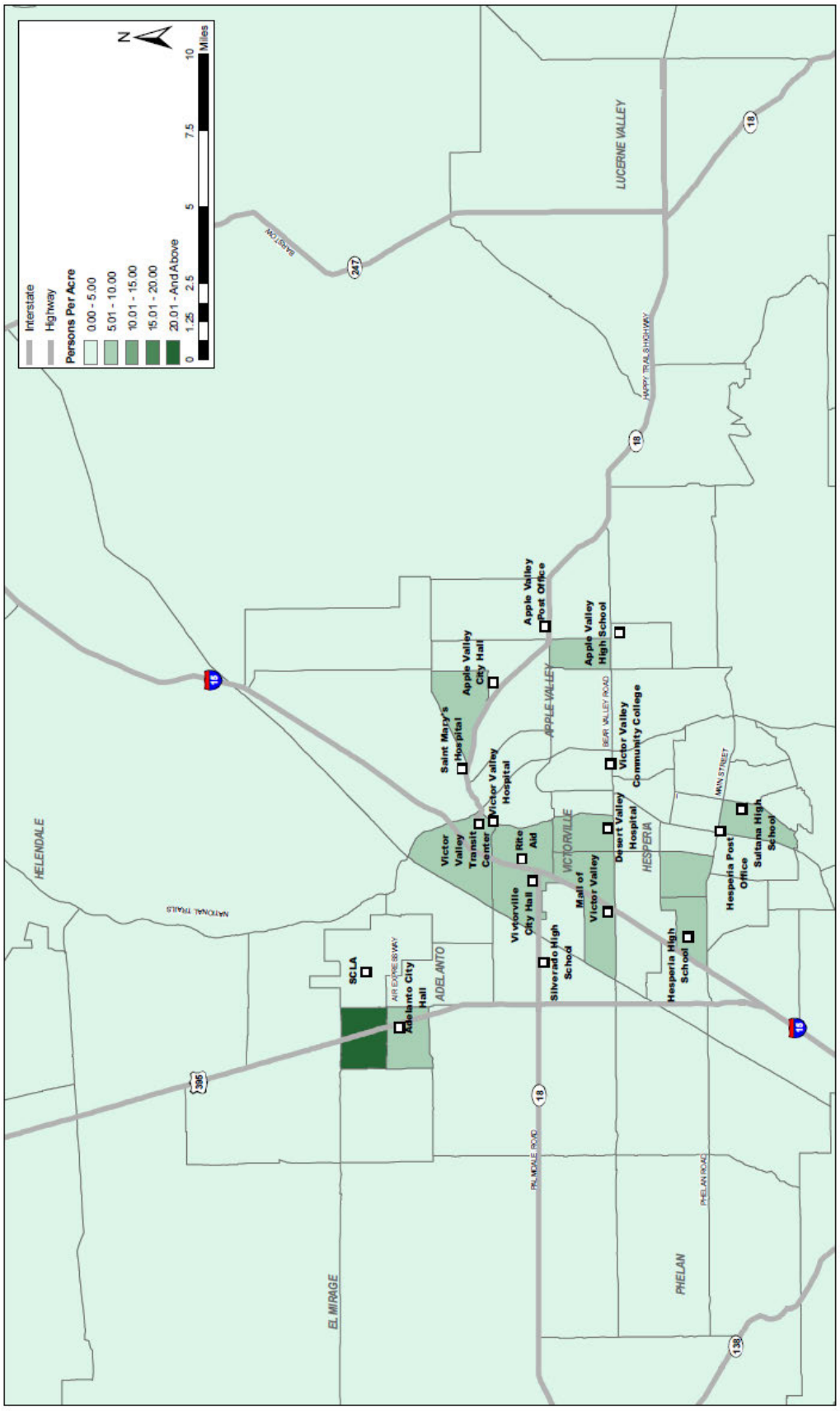
As population and employment density grow in the Victor Valley region it will become beneficial for the VVTA system to evolve into a grid-like system of trunk routes, with a similar system of and circulator services. This evolution of services is described in the development of the transit alternatives for the Victor Valley.

Three transit alternatives were developed to study potential transit service scenarios in the Victor Valley: the Base Alternative; the Plan Alternative; and the Vision Alternative.

Table 7-4: Victor Valley Population and Employment Growth Forecasts

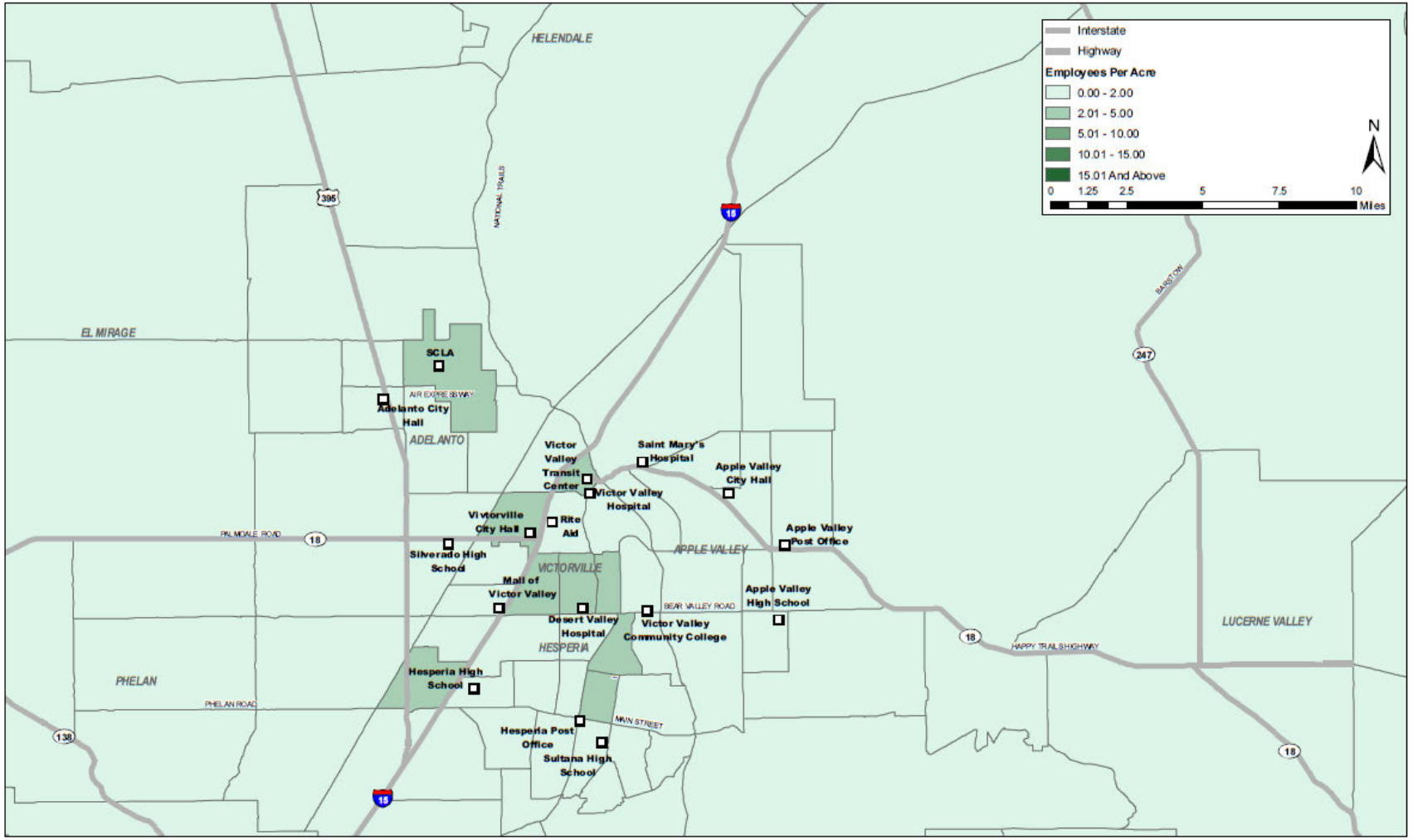
City	2005	2015	2025	2035	Growth 2005-2035 Net	Growth 2005-2035 Percent
Population						
Adelanto City	24,156	56,674	86,629	114,398	90,242	374%
Apple Valley Town	65,760	77,115	86,749	95,681	29,921	46%
Hesperia City	78,284	126,456	170,384	211,108	132,824	170%
Victorville City	90,913	122,205	153,376	182,275	91,362	100%
Total Victor Valley	259,113	382,450	497,138	603,462	344,349	133%
Employment						
Adelanto City	5,125	10,501	15,232	20,884	15,759	307%
Apple Valley Town	12,488	16,243	18,500	23,662	11,174	89%
Hesperia City	14,934	25,706	32,787	47,998	33,064	221%
Victorville City	31,425	49,131	61,972	84,335	52,910	168%
Total Victor Valley	63,972	101,581	128,491	176,879	112,907	176%

Source: SCAG, 2009.



Source: Parsons, 2009.

Figure 7-3: Victor Valley Population Density Year 2035



VVTA VISION Employment Density Year 2035

DRAFT LONG RANGE TRANSIT PLAN (LRTP) for the Victor Valley

San Bernardino Associated Governments (SANBAG)
August 2009

Source: Parsons, 2009.

Figure 7-4: Victor Valley Employment Density Year 2035

Base Alternative

The Base Alternative for the Victor Valley, as shown in Figure 7-5, is coded and modeled in coordination with the Base Transit Alternative for the San Bernardino Valley. This alternative includes the existing transit services operated by VVTA, as described in Section 7.1. Base Alternative transit routes and operating statistics are summarized in Table 7-5. This alternative operates 23 vehicles in peak service.

Plan Alternative

The Plan Alternative for the Victor Valley, as shown in Figure 7-6, is coded and modeled in coordination with the Plan Transit Alternative for the San Bernardino Valley. This alternative includes the Base Alternative transit routes with headways equilibrated to serve the Year 2035 transit demand.

Additional circulator services are also included to provide coverage to newly developed areas of the Victor Valley.

The Plan Alternative also introduces express bus services between the Victor Valley and San Bernardino Valley. Two express bus routes are coded, providing services between major activity centers and transfer locations in Victor Valley and two destinations in San Bernardino Valley: the Palm Station of the E Street BRT route in San Bernardino; and the Metrolink Station and Ontario Mills Mall in Rancho Cucamonga. These express bus routes are displayed in Figure 7-6.

Plan Alternative transit routes and operating statistics are summarized in Table 7-6. This alternative operates 40 vehicles in peak service.

Table 7-5: Year 2035 Base Alternative – Weekday VVTA Transit Service

		Headway		Peak		
Route	Description	Peak	Off-peak	Vehicles	VMT	VHT
21	Tri-Community	90	90	1	366	17.5
22	Helendale	120	120	1	385	14.2
23	Lucerne Valley	90	90	1	558	14.6
31	Adelanto-Victorville	60	60	1	313	23.8
32	Adelanto-Victorville North	60	60	2	349	14.9
33	Adelanto Circulator	60	60	2	387	15.0
40	Apple Valley North	60	60	1	323	14.9
41	Apple Valley/Victorville	60	60	1	411	29.1
43	Apple Valley/Victor Valley College	60	30	2	503	20.8
44	Victor Valley Mall/Hesperia	60	60	1	355	29.8
45	Victorville/Hesperia	30	30	3	901	38.9
46	Hesperia Deviation	60	60	1	169	14.8
47	Apple Valley South Deviation	60	60	1	223	14.9
48	Hesperia West	60	60	1	296	15.0
51	Victorville Circulator	60	60	1	174	14.9
52	Victorville/Mall	60	60	1	261	14.9
53	Victor Valley College/Mall	60	30	1	345	28.5
54	Victorville West	60	60	1	240	15.0
Total				23	6,559	351

Source: Hexagon, 2009.

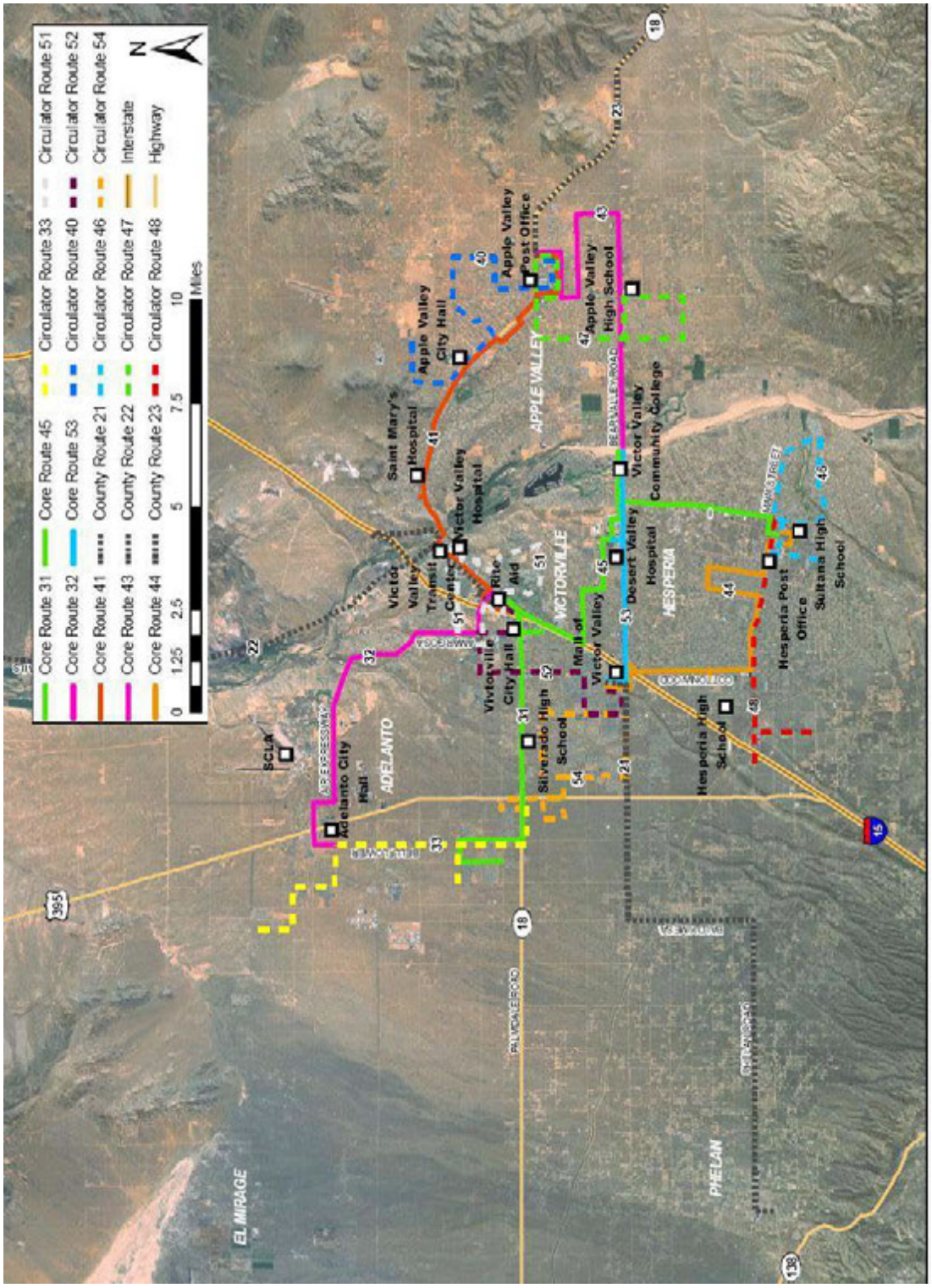


Figure 7-5: VVTA Baseline Alternative

Source: Parsons, 2009.

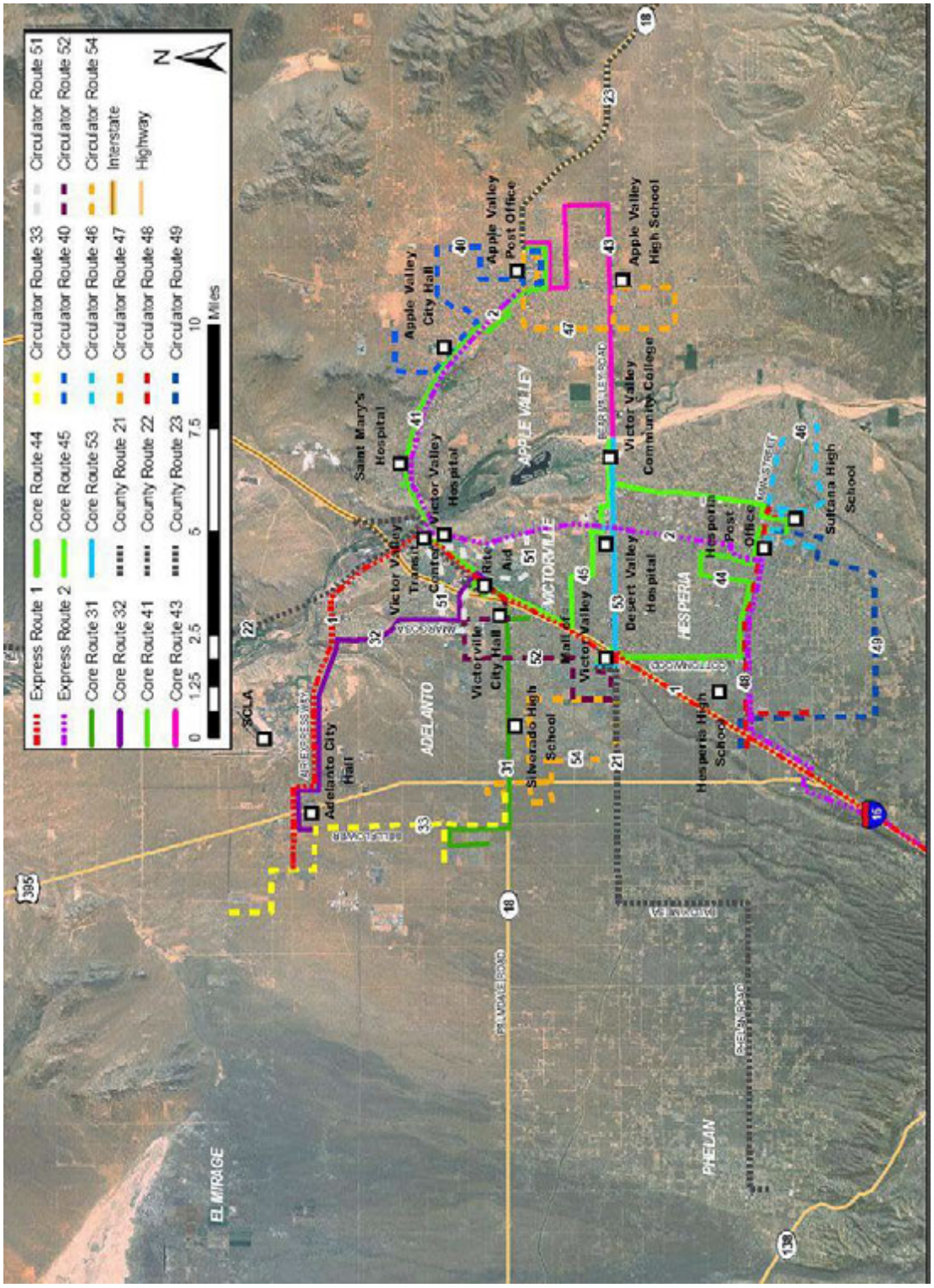


Figure 7-6: VVTA Plan Alternative

Source: Parsons, 2009.

Table 7-6: Year 2035 Plan Alternative – Weekday VVTA Transit Service

Route	Description	Headway		Peak		
		Peak	Off-peak	Vehicles	VMT	VHT
1	Victor Valley-CSU/Rialto	120	180	2	544	20.2
2	Victor Valley-Fontana	120	180	2	706	26.4
21	Tri-Community	90	90	1	366	17.5
22	Helendale	120	120	1	385	14.2
23	Lucerne Valley	90	90	1	558	14.6
31	Adelanto-Victorville	30	30	2	626	32.3
32	Adelanto-Victorville North	20	30	5	830	55.4
33	Adelanto Circulator	45	60	2	435	24.5
40	Apple Valley North	60	60	1	323	14.9
41	Apple Valley/Victorville	30	30	2	821	35.1
43	Apple Valley/Victor Valley College	30	60	2	425	19.7
44	Victor Valley Mall/Hesperia	20	30	3	843	39.1
45	Victorville/Hesperia	15	30	5	1,239	60.5
46	Hesperia Deviation	60	60	1	169	14.8
47	Apple Valley South Deviation	60	60	1	223	14.9
48	Hesperia West	60	60	1	296	15.0
49	South Hesperia Circulator	60	60	1	335	16.5
51	Victorville Circulator	60	60	1	174	14.9
52	Victorville/Mall	30	30	2	523	24.1
53	Victor Valley College/Mall	15	30	3	583	28.2
54	Victorville West	60	60	1	240	15.0
Total				40	10,644	518

Source: Hexagon, 2009.

Vision Alternative

The Vision Alternative for the Victor Valley, as shown in Figure 7-7, is coded and modeled in coordination with the Vision Transit Alternative for the San Bernardino Valley. This alternative includes a restructuring of the Core Transit routes to provide more direct service between major activity centers at a higher level of service. Seven Core Transit routes are combined and restructured to create four trunk routes, which are displayed in Figure 7-7.

The Plan Alternative circulator services are maintained to provide coverage to the Victor Valley communities. These transit routes are coded with headways equilibrated to serve the Year 2035 transit demand. Vision Alternative transit routes and operating statistics are summarized in Table 7-7. This alternative operates 42 vehicles in peak service. The fleet requirement and VHT for the Vision Alternative are almost identical to the operating statistics for the Plan Alternative, which allows us to directly compare the ridership and productivity impacts of the revised service plan.

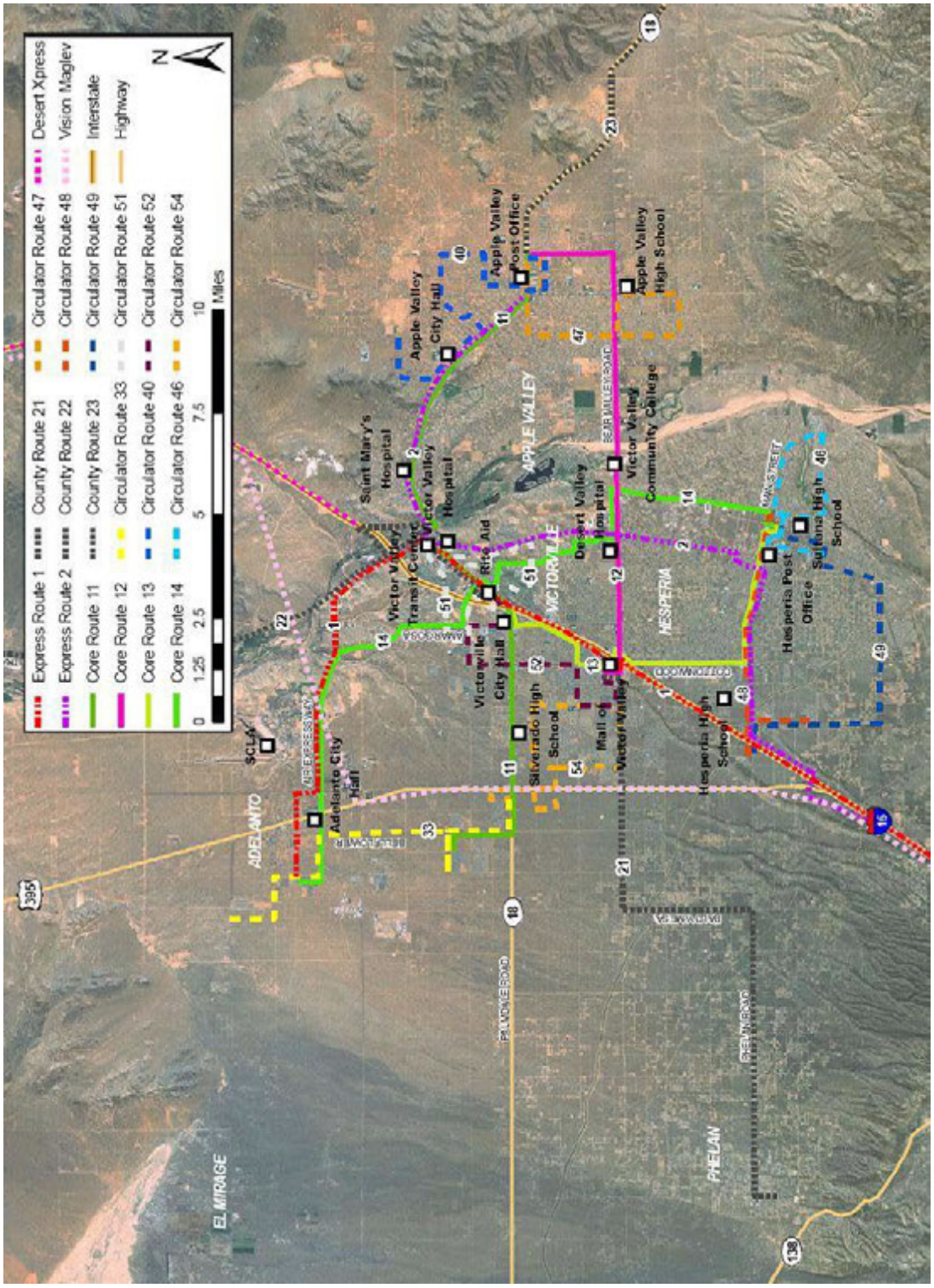


Figure 7-7: VVTA Vision Alternative

Source: Parsons, 2009.

Table 7-7: Year 2035 Vision Alternative – Weekday VVTA Transit Service

Route	Description	Headway		Peak Vehicles	VMT	VHT
		Peak	Off-peak			
1	Victor Valley-CSU/Rialto	120	180	2	544	20.2
2	Victor Valley-Fontana	120	180	2	706	26.4
11	Adelanto/Victorville/Apple Valley	20	30	5	1,382	63.3
12	Hesperia/Apple Valley	15	30	5	1,122	52.6
13	Victorville/Hesperia	30	30	3	893	41.1
14	Adelanto/Victorville/Hesperia	15	30	11	1,795	108.1
21	Tri-Community	90	90	1	366	17.5
22	Helendale	120	120	1	385	14.2
23	Lucerne Valley	90	90	1	558	14.6
33	Adelanto Circulator	45	60	2	435	24.5
40	Apple Valley North	60	60	1	323	14.9
46	Hesperia Deviation	60	60	1	169	14.8
47	Apple Valley South Deviation	60	60	1	223	14.9
48	Hesperia West	60	60	1	296	15.0
49	South Hesperia Circulator	60	60	1	335	16.5
51	Victorville Circulator	60	60	1	174	14.9
52	Victorville/Mall	30	30	2	425	19.5
54	Victorville West	60	60	1	240	15.0
Total				42	10,371	508

Source: Hexagon, 2009.

7.7 Evaluation of Alternatives

The Year 2035 Victor Valley Transit Alternatives described in the preceding section were tested using the San Bernardino Valley Focus Model. These model runs employed a single set of land use and socioeconomic assumptions to test three transit alternatives. The model was used to produce ridership estimates for each transit route. These ridership estimates were used to estimate system-wide operating requirements and efficiency statistics for the transit alternatives. All costs are expressed in constant Year 2009 dollars.

Base Alternative

The Base Alternative for the Victor Valley includes the existing transit services operated by VVTA, including fixed-route and paratransit services. Ridership, operating statistics and performance statistics for the Base Alternative transit routes are summarized in Table 7-8. This transit alternative, which operates 23 fixed-route vehicles and 25 ADA vehicles in peak service, is forecast to carry over 5,000 daily transit trips in 2035. The annual net operating cost of approximately $8.25 million is comparable to the existing operating cost of VVTA fixed route services.

Table 7-8: Year 2035 Base Alternative – VVTA Performance Measures

	Type of Service					
	Core	County	Circulator	Express	ADA	Total
Peak Vehicles	14	3	6	0	25	48
Vehicle Miles Traveled	3,908	1,309	1,342	0	2,200	8,759
Vehicle Hours Traveled	231	46	75	0	126	477
Daily Riders	3,944	287	425	0	370	5,026
Passenger Miles	14,904	954	1,652	0	4,700	22,209
Riders per Vehicle Hour	17.1	6.2	5.7	-	2.9	10.5
Average Load	3.8	0.7	1.2	-	2.1	2.5
Average Speed	17.0	28.3	18.0	-	17.5	18.3
Gross Annual Cost	$4,174,200	$992,700	$1,352,700	$0	$3,067,800	$9,587,400
Fare Revenue	$623,100	$160,600	$201,900	$0	$350,600	$1,336,200
Net Annual Cost	$3,551,100	$832,100	$1,150,800	$0	$2,717,200	$8,251,200

Source: Hexagon, 2009.

The system-wide operating statistics include 10.5 passengers per VHT, which is to the statistics reported in the recent *FY 2006-2008 Triennial Performance Audit of Victor Valley Transit Authority*. This level of ridership reflects an average mode share of 0.12%, as compared to a 0.17% mode share for existing transit services. This decrease from the existing mode share is due to the expansion of development in the Victor Valley into areas not currently served by circulator or deviation bus services.

Total net O&M costs for the Base Alternative are summarized in Table 7-9. This alternative will cost over $214 million to operate for the years 2010-2035, after accounting for fare revenue.

The VVTA fleet and capital cost requirements of the Base Alternative are displayed in Table 7-10. The Base Alternative assumes that the standard bus fleet for fixed-route services will be maintained at 30 vehicles through the year 2035, and the ADA fleet will be maintained at 33 vehicles. The vehicle replacement estimates assume that standard buses have a life span of 12 years, and ADA vehicles have a life span of 4 years. Capital cost estimates assume that standard buses cost $400,000 to replace and ADA vehicles cost $85,000 to replace (in constant year 2009 dollars).

Table 7-10 shows that the total capital cost for fleet replacement through the year 2035 for the Base Alternative is almost $45 million. This table also includes an estimate of additional capital costs for the Base Alternative. The additional capital costs for the 2010-2015 time period covers the cost of a new administrative facility in Hesperia. The additional capital costs for the subsequent time periods are estimated as a function of the fleet replacement and expansion costs, similar to the methodology used for estimating Omnitrans capital costs in Chapter 6. The total capital cost for the Base Alternative through the year 2035 is estimated to be over $107 million.

Table 7-9: VVTA Operating and Maintenance Cost – Base Alternative

	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Total O&M Costs	$49.5	$41.3	$41.3	$41.3	$41.3	$214.6

Source: Hexagon, 2009.

Table 7-10: VVTA Fleet Requirement and Capital Cost – Base Alternative

	2009	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Standard Bus							
Peak	23	23	23	23	23	23	
Spare	7	7	7	7	7	7	
Total Fleet	30	30	30	30	30	30	
Fleet Replacement		15	13	13	13	13	67
Fleet Expansion		0	0	0	0	0	0
Total Standard Purchase		15	13	13	13	13	67
Capital Cost ($M)		$6.00	$5.20	$5.20	$5.20	$5.20	$26.80
ADA Vehicle							
Total Fleet	33	33	33	33	33	33	
ADA Vehicle Purchase		50	41	41	41	41	214
Capital Cost ($M)		$4.25	$3.49	$3.49	$3.49	$3.49	$18.19
Total Fleet	63	63	63	63	63	63	
Total Purchase		65	54	54	54	54	281
Total Fleet Cost ($M)		$10.25	$8.69	$8.69	$8.69	$8.69	$44.99
Other Capital Costs ($M)		$19.00	$10.86	$10.86	$10.86	$10.86	$62.43
Total Capital Cost ($M)		$29.25	$19.54	$19.54	$19.54	$19.54	$107.42

Source: Hexagon, 2009.

Plan Alternative

The Plan Alternative for the Victor Valley includes an improved level of service on existing Core Transit routes operated by VVTA, increased circulator service to newly developed areas of Victor Valley, and new express bus service to the San Bernardino Valley. Ridership, operating statistics and performance statistics for the Plan Alternative transit routes are summarized in Table 7-11. This transit alternative, which operates 40 fixed-route vehicles and 25 ADA vehicles in peak service, is forecast to carry approximately 9,100 daily transit trips in 2035, which is 82 percent higher than the ridership forecast for the Base Alternative. This ridership includes approximately 300 daily trips between the Victor Valley and San Bernardino Valley on new express bus services. The annual net operating cost of $10.46 million for the Plan Alternative represents a 27% increase over the Base Alternative costs.

The system-wide operating statistics for the Plan Alternative, including 14.6 passengers per VHT, is a modest improvement over the productivity rating for the Base Alternative. This level of ridership reflects an average mode share of 0.21%. While this mode share

Table 7-11: Year 2035 Plan Alternative – VVTA Performance Measures

	Type of Service					
	Core	County	Circulator	Express	ADA	Total
Peak Vehicles	27	3	6	4	25	65
Vehicle Miles Traveled	6,695	1,309	1,390	1,250	2,200	12,844
Vehicle Hours Traveled	333	47	74	47	126	627
Daily Riders	7,159	352	337	931	370	9,149
Passenger Miles	28,105	1,088	1,318	15,251	4,700	50,463
Riders per Vehicle Hour	21.5	7.5	4.6	20.0	2.9	14.6
Average Load	4.2	0.8	0.9	12.2	2.1	3.9
Average Speed	20.1	27.7	18.9	26.8	17.5	20.5
Gross Annual Cost	$6,041,000	$1,014,200	$1,334,300	$728,300	$3,067,800	$12,185,600
Fare Revenue	$901,700	$164,100	$199,200	$108,700	$350,600	$1,724,300
Net Annual Cost	$5,139,300	$850,100	$1,135,100	$619,600	$2,717,200	$10,461,300

Source: Hexagon, 2009.

represents a significant improvement over both the existing mode share (0.17%) and the Base Alternative mode share (0.11%), it is still very small in comparison to the mode shares observed in more densely populated areas, such as the existing 0.8% mode share in the San Bernardino Valley.

Total net O&M costs for the Plan Alternative are summarized in Table 7-12. This alternative will cost over $243 million to operate for the years 2010-2035, after accounting for fare revenue.

The VVTA fleet and capital cost requirements of the Plan Alternative are displayed in Table 7-13. The Plan Alternative assumes that the standard bus fleet for fixed-route services will grow from 30 vehicles to 49 vehicles by the year 2035, and the ADA fleet will be maintained at 33 vehicles. The vehicle replacement and capital cost estimates use the same assumptions described for the Base Alternative.

Table 7-13 shows that the total capital cost for fleet replacement through the year 2035 for the Plan Alternative is over $56 million, which represents a 26% increase over the fleet capital costs for the Base Alternative. This table also includes an estimate of additional capital costs for the Plan Alternative. The additional capital costs for the 2010-2015 time period covers the cost of a new administrative facility in Hesperia. The additional capital costs for the subsequent time periods are estimated as a function of the fleet replacement and expansion costs, similar to the methodology used for estimating Omnitrans capital costs in Chapter 6. The total capital cost for the Plan Alternative through the year 2035 is estimated to be over $131 million, which represents a 22% increase over the capital costs for the Base Alternative.

Table 7-12: VVTA Operating and Maintenance Cost –Plan Alternative

	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Total O&M Costs	$50.8	$44.8	$47.0	$49.2	$51.4	$243.3

Source: Hexagon, 2009.

Table 7-13: VVTA Fleet Requirement and Capital Cost – Plan Alternative

	2009	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Standard Bus							
Peak	23	28	32	35	38	40	
Spare	7	7	7	8	8	9	
Total Fleet	30	35	39	43	46	49	
Fleet Replacement		15	13	15	16	18	77
Fleet Expansion		5	4	4	3	3	19
Total Standard Purchase		20	17	19	19	21	96
Capital Cost ($M)		$8.00	$6.80	$7.60	$7.60	$8.40	$38.40
ADA Vehicle							
Total Fleet	33	33	33	33	33	33	
ADA Vehicle Purchase		50	41	41	41	41	214
Capital Cost ($M)		$4.25	$3.49	$3.49	$3.49	$3.49	$18.19
Total Fleet	63	68	72	76	79	82	
Total Purchase		70	58	60	60	62	310
Total Fleet Cost ($M)		$12.25	$10.29	$11.09	$11.09	$11.89	$56.59
Other Capital Costs ($M)		$19.00	$12.86	$13.86	$13.86	$14.86	$74.43
Total Capital Cost ($M)		$31.25	$23.14	$24.94	$24.94	$26.74	$131.02

Source: Hexagon, 2009.

Vision Alternative

The Vision Alternative for the Victor Valley includes a restructuring of the Core Transit routes to provide more direct service between major activity centers at a higher level of service. Ridership, operating statistics and performance statistics for the Vision Alternative transit routes are summarized in Table 7-14. This transit alternative, which operates 42 vehicles in peak service, is forecast to carry approximately 9,900 daily transit trips in 2035, which is eight percent higher than the ridership forecast for the Plan Alternative. The annual operating cost of $10.31 million for the Vision Alternative is slightly lower than the Plan Alternative costs. This indicates that the revised service plan in the Vision Alternative will generate a reasonable improvement in transit ridership for a slightly lower cost.

The system-wide operating statistics for the Vision Alternative, including 16.1 passengers per VHT, is a significant improvement over the productivity rating for the Base Alternative. This level of ridership reflects an average mode share of 0.25%, which is also a significant improvement over the Plan Alternative mode share (0.21%)

Total net O&M costs for the Vision Alternative are summarized in Table 7-15. This alternative will cost over $241 million to operate for the years 2010-2035, after accounting for fare revenue.

Table 7-14: Year 2035 Vision Alternative – VVTA Performance Measures

	Type of Service					
	Core	County	Circulator	Express	ADA	Total
Peak Vehicles	24	3	11	4	25	67
Vehicle Miles Traveled	5,192	1,309	2,620	1,250	2,200	12,571
Vehicle Hours Traveled	265	47	132	47	126	617
Daily Riders	7,409	266	941	929	370	9,915
Passenger Miles	31,907	923	3,703	15,352	4,700	56,585
Riders per Vehicle Hour	27.9	5.6	7.1	19.9	2.9	16.1
Average Load	6.1	0.7	1.4	12.3	2.1	4.5
Average Speed	19.6	27.7	19.8	26.8	17.5	20.4
Gross Annual Cost	$4,804,700	$1,014,200	$2,393,100	$728,300	$3,067,800	$12,008,100
Fare Revenue	$717,200	$164,100	$357,200	$108,700	$350,600	$1,697,800
Net Annual Cost	$4,087,500	$850,100	$2,035,900	$619,600	$2,717,200	$10,310,300

Source: Hexagon, 2009.

Table 7-15: VVTA Operating and Maintenance Cost – Vision Alternative

	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Total O&M Costs	$50.7	$44.6	$46.6	$48.7	$50.7	$241.3

Source: Hexagon, 2009.

The VVTA fleet and capital cost requirements of the Vision Alternative are displayed in Table 7-16. The Vision Alternative assumes that the standard bus fleet for fixed-route services will grow from 30 vehicles to 51 vehicles by the year 2035, and the ADA fleet will be maintained at 33 vehicles. The vehicle replacement and capital cost estimates use the same assumptions described for the Base Alternative.

Table 7-16 shows that the total capital cost for fleet replacement through the year 2035 for the Vision Alternative is over $57 million, which represents a 28% increase over the capital costs for the Base Alternative. This table also includes an estimate of additional capital costs for the Vision Alternative. The additional capital costs for the 2010-2015 time period covers the cost of a new administrative facility in Hesperia. The additional capital costs for the subsequent time periods are estimated as a function of the fleet replacement and expansion costs, similar to the methodology used for estimating Omnitrans capital costs in Chapter 6. The total capital cost for the Plan Alternative through the year 2035 is estimated to be over $133 million, which represents a 24% increase over the capital costs for the Base Alternative.

Analysis

The existing ridership in the Victor Valley is very low because the existing development patterns (and socioeconomic profile) of the Victor Valley aren't conducive to a larger transit ridership and the existing transit service is able to attract only transit dependents. Our analysis shows that, while new transit service in the Victor Valley can be designed to improve the productivity of the system, it is not likely to attract significant transit ridership or mode shares similar to transit service in more densely populated areas, such as the San Bernardino Valley.

Table 7-16: VVTA Fleet Requirement and Capital Cost – Vision Alternative

	2009	2010 - 2015	2016 - 2020	2021 - 2025	2026 - 2030	2031 - 2035	2010 - 2035
Standard Bus							
Peak	23	28	33	36	39	42	
Spare	7	7	7	8	8	9	
Total Fleet	30	35	40	44	47	51	
Fleet Replacement		15	13	15	17	18	78
Fleet Expansion		5	5	4	3	4	21
Total Standard Purchase		20	18	19	20	22	99
Capital Cost ($M)		$8.00	$7.20	$7.60	$8.00	$8.80	$39.60
ADA Vehicle							
Total Fleet	33	33	33	33	33	33	
ADA Vehicle Purchase		50	41	41	41	41	214
Capital Cost ($M)		$4.25	$3.49	$3.49	$3.49	$3.49	$18.19
Total Fleet	63	68	73	77	80	84	
Total Purchase		70	59	60	61	63	313
Total Fleet Cost ($M)		$12.25	$10.69	$11.09	$11.49	$12.29	$57.79
Other Capital Costs ($M)		$19.00	$13.36	$13.86	$14.36	$15.36	$75.93
Total Capital Cost ($M)		$31.25	$24.04	$24.94	$25.84	$27.64	$133.72

Source: Hexagon, 2009.

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CHAPTER 8 RURAL TRANSIT AGENCIES

8.1 FUTURE CONDITIONS

According to regional growth forecasts the majority of the rural areas of the county are forecasted to grow at a rapid pace from 2005 levels over the next 25 years. However the ability and desire to attract and maintain jobs and the necessary corresponding population is currently being debated. Rural transit agencies currently operate in a difficult environment that provides significant challenges to providing mobility and accessibility to transit dependent populations. In 2007, SANBAG prepared the *Public Transit-Human Services Transportation Coordination Plan* for San Bernardino County to identify service improvements for five rural areas of the county. It is anticipated that many of the challenges that result from the geographic isolation of these areas will be addressed in the upcoming *Rural Connectivity Study*. Growth in these areas will present new opportunities for transit as new employment centers are created and new populations arrive, but it is anticipated that these opportunities are best addressed in a short range planning process. The long range transit plan for the rural areas focuses on maintaining existing transit service and funding sources over the life of the plan.

Table 8-1 provides population and employment data by city boundaries prepared by SCAG in 2007. Barstow, served by Barstow Area Transit (BAT) and Twentynine Palms, served by Morongo Basin Transit Authority (MBTA), are expected to grow and a rapid rate, however this growth is tied to the potential growth of the nearby military installations of Fort Irwin and Twentynine Palms. Yucca Valley, also served by MBTA, is also expected to grow as nearby Twentynine Palms expands. The city of Big Bear, served by the Mountain Area Regional Transit Authority (MARTA), is expected to grow as a tourist destination, providing transit opportunities to both tourists and employees of the ski resorts and hotels. The city of Needles, served by Needles Area Transit (NAT), is expected to maintain existing levels of population and employment.

Table 8-1: Population and Employment Growth

CITY	Population 2005	Population 2035	% Growth	Households 2005	Households 2035	% Growth	Employment 2005	Employment 2035	% Growth
Barstow city	23,601	69,533	195%	8,123	25,079	209%	12,209	35,527	191%
Big Bear Lake city	6,173	10,657	73%	2,514	4,466	78%	5,887	11,546	96%
Needles city	5,622	5,840	4%	2,134	2,246	5%	3,049	3,049	0%
Twentynine Palms city	27,442	69,823	154%	7,139	19,205	169%	3,020	14,786	390%
Yucca Valley town	20,155	37,485	86%	7,869	16,856	114%	4,313	11,308	162%

Source: SCAG, 2009

8.2 Future Service

The Long Range Transit Plan for the rural areas of the county provides the focus of SANBAG and rural transit operators on the maintenance of existing transit services and funding sources. In addition to maintaining the current level of transit service over the next 25 years, opportunities identified include increased transit service to military installations, as well as increased mobility and accessibility for health and human services, both of which will be looked at in further detail in the short range planning process in these areas.

Fleet Requirements

The majority of the rural operators' fleet consists of 8 passenger to 24 passenger paratransit vehicles. MARTA operates one 30 passenger coach vehicle. The current vehicle fleet for the rural operators and replacement cost over the next 25 years is shown in Table 8-2. The replacement assumes a 12-year service lifespan and Year 2009 dollars.

Operating Cost

Gross operating costs, included ADA service, for the rural operators are shown in Table 8-3. The costs assume similar levels of service from current conditions and costs are shown in Year 2009 dollars. Net operating costs are shown in Table 8-4 with the respective fare recovery ratios.

Table 8-2: Fleet Size, Average Age and Replacement Cost

	Fleet Size	Average Vehicle Year	Fleet Replacement Cost ($M)
NAT	7	2004	1.4
MBTA	31	2003	6.2
MARTA	30	2002	6
BAT	29	2003	5.8

Source: Parsons, 2009.

Table 8-3: Gross Operating Costs

	FY2008	FY 2010-2035
NAT	295,991	7,399,769
MBTA	2,074,516	51,862,895
MARTA	2,357,023	58,925,579
BAT	2,884,999	72,124,965

Source: Parsons, 2009.

Table 8-4: Net Operating Costs

	FY 2008	FY 2010-2035	FY 2008 Farebox Recovery Ratio
NAT	262,596	6,564,899	11.28%
MBTA	1,692,886	42,322,146	18.40%
MARTA	2,110,972	52,774,290	10.44%
BAT	2,544,276	63,606,894	11.58%

Source: Parsons, 2009.

CHAPTER 9 PUBLIC OUTREACH

9.1 PUBLIC WORKSHOPS

SANBAG convened a series of community workshops and agency outreach efforts regarding the LRTP for San Bernardino County. The initial public workshop efforts occurred between July 18 and August 1, 2006. City outreach meetings were held in May 2009 with city staff of jurisdictions with identified BRT corridors. Final public outreach efforts were held August 18 -20, 2009. Complete Public Workshop summaries are provided under separate cover.

INITIAL PUBLIC WORKSHOPS

SANBAG's initial public outreach efforts in 2006 were held in conjunction with workshops on the Redlands Passenger Rail Extension. The purpose of the initial workshops was to inform community members about the potential transportation options being considered for the County of San Bernardino, and in particular the San Bernardino Valley, as well as to receive community feedback on the LRTP Alternatives.

The workshops occurred in the San Bernardino Valley and approximately 85 community members signed in as participants in the workshops. Participants were encouraged to provide both verbal and written comments, and overall impressions were primarily positive. Meeting materials included separate workshop booklets and discussions were provided for each subject.

Each workshop involved self-paced visits, facilitated by agency and consultant staff, where participants could view, discuss and provide input on options for transit technologies, routing, stations and proposed "transit villages" that could include housing, retail centers, offices, entertainment venues and parks near each station.

OVERALL IMPRESSIONS

In both the written and verbal comments, participants provided many positive responses. They indicated strong support for completing a Long Range Transit Plan and phasing projects for development. Participants expressed considerable frustration about traffic and were interested in options that would best address current conditions. Some expressed frustration with the length of time it takes to get mass transit projects built and wanted the projects delivered sooner.

While there was overall support for the local bus service, many participants believed that frequency, hours of service and bus stops needed to be improved. There were also requests for more information on the service.

In terms of technologies, participants' preferences ranged from bus transit, to bus rapid transit, to passenger rail, to combinations of these modes. Others expressed interest in energy efficient technologies such as low emission, self-generating, electric, and hybrid vehicles. A few expressed interests in Maglev or monorail technologies, but others expressed concerns about their feasibility and cost.

Participants reviewed five (5) alternatives for long range transit plan. The five transit alternatives include:

- Year 2035 Baseline
- Year 2035 Planned
- Transit Vision #1 – Bus and Bus Rapid Transit Emphasis
- Transit Vision #2 – Rail Emphasis
- Transit Vision #3 – Ultimate

As part of the LRTP Process, the three Vision Alternatives were combined into one Vision Alternative, combining the best performing elements of each.

9.2 City and Agency Outreach

During May of 2009, SANBAG held City outreach meetings at the SANBAG office with jurisdictions with premium transit corridors identified. Representatives from SANBAG's transit department and planning department staff were in attendance as well as OMNITRANS staff. Topics of discussion included a review of the identified Transit Corridors, growth forecasts for the each city in the travel demand model, an update of the SB 375 process, land use plans and policies, Federal Transit Administration guidelines for project development and OMNITRANS role in the development of the corridors. Overall, most of the city staff supported the transit corridors identified. Almost all of the planned development areas expected to accommodate future growth were deemed to be satisfactorily served in the plan. The City of Ontario requested that Haven Avenue also be identified as a potential transit corridor, and this request was analyzed and included in the LRTP.

9.3 Final Public Meeting(s)

SANBAG hosted Final Public Meetings on August 18, 19, and 20, 2009. The purpose of the meetings was to provide an update on the planning process and new developments, review the potential alternatives for expanding the transit system in the County of San Bernardino, and in particular the East San Bernardino Valley, the West San Bernardino Valley, and the Victor Valley, and answer questions and receive feedback from the community.

Approximately 36 community members signed in as participants in the public meetings. Each public meeting was composed of two parts: a self-paced open house featuring informational exhibits, followed by a presentation and group discussion. Participants learned about the purpose, need, process and objectives of the LRTP, and viewed and discussed potential alternatives, or scenarios, of transit infrastructure improvements from the LRTP. Participants also viewed illustrations of new types of development and transit technologies proposed in the LRTP, including transit oriented development (TOD) and bus rapid transit (BRT).

Afterwards, a presentation was given expanding on topics covered in the open house exhibits. Each meeting concluded with a discussion session where participants shared questions or comments. During this portion of the meeting, project team members recorded discussion points on a large piece of paper at the front of the room. Participants also provided written feedback via a comment card.

Overall Impressions

The greatest number of questions and comments from participants addressed BRT fuel efficiency and technology. Participants also expressed concerns about how new transit technologies and route changes would impact street configuration and traffic flow. Additionally, many participants inquired as to how LRTP improvements would be funded, and specifically, how much of the cost is covered by local, state and federal sources. Participants also asked questions about Senate Bill (SB) 375 and how it affects the LRTP. Finally, participants had specific questions about the plan itself, including routing and placement of stations.

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Chapter 10 Financial Plan

10.1 Funding Sources and Amounts

Federal Transit Funds

The Federal Public Transportation Act of 2005 authorizes funding under the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) legislation for FY 2005 through FY 2009. The Federal Transit Administration (FTA) administers these funds primarily on a formula basis.

Federal funds for San Bernardino County are allocated under three separate urbanized areas in addition to the rural area allocations. Urbanized area funds are made available to individual transit operating agencies that are designated recipients or grantees. Rural transit systems receive funds from the FTA through the State of California Department of Transportation (Caltrans).

Revenue estimates have been provided for four Federal transit programs, as summarized in the following.

- **Federal 5317 New Freedom Program** The FTA Section 5317 New Freedom Program began in FY 2006. This program provides funding for new transportation services beyond those required by the Americans with Disabilities (ADA). Development of a plan to coordinate transportation services with other federal human service programs is required prior to use of these program funds. Funds are allocated using a formula based on the disabled population of an area (using 2000 Census data), with 60% going to urbanized areas with population greater than 200,000, 20% to states for use in small urban areas with populations less than 200,000, and 20% for use in rural areas.
- **Federal 5316 Job Access & Reverse Commute (JARC) Program** The FTA Section 5316 Program provides maximum flexibility to job access projects designed to meet the needs of individuals who are not effectively served by public transportation. The program requires coordination between public, private, and non-profit transportation providers and other federal programs in the JARC Program, New Freedom Program, and Elderly and Disabled Program. The JARC Program was changed in FY 2005 to a formula program from a competitive discretionary program. Funds are allocated using a formula based on the number of eligible low-income and welfare recipients in each area (using 2000 Census data), with 60% going to urbanized areas with population greater than 200,000, 20% to states for use in small urban areas with populations less than 200,000, and 20% for use in rural area.
- **Federal Section 5311 Rural Program** The FTA Section 5311 Program provides formula funds for rural transit systems. Funds are allocated based on population with land area receiving 20% of these funds as of FY 2005.
- **Federal Section 5307 Urbanized Area Formula Program** The FTA Section 5307 Program provides formula funds to urbanized areas with population of 200,000 or more according to the 2000 Census. Funds are apportioned based on formula involving population, population density, and revenue miles. Categories include fixed guideway incentive and basic bus/urbanized areas, as well as new programs for small-urbanized areas, small transit intensive cities, and growing and high-density states.

- **Federal Section 5309 Rail and Fixed Guideway Modernization Program** The FTA Section 5309 Program provides formula funds for the modernization and improvement of existing fixed guideways. A fixed guideway refers to any transit service that uses exclusive or controlled rights-of-way or rails, entirely or in part. Funds are allocated by a statutory formula to urbanized areas with rail systems that have been in operation for at least seven years.

Federal funds are also available for fixed guideway Transit Projects in the form of Federal 5309 New/Starts Small Starts funds. This competitive funding source is distributed by project ranking and is an expected source of funding for BRT corridors and new rail projects. Flexible funds are also available to transit providers in the form on Surface Transportation Program (STP) funds and Congestion Management and Air Quality (CMAQ) funds.

STATE FUNDS

Transportation Development Act (TDA) funds include revenues available from the Local Transportation Fund (LTF) and the State Transit Assistance (STA) Fund. STA has been suspended by the State and is not included in the forecasts. The LTF is derived from a ¼ cent of the general sales tax collected statewide and returned to source-county by the State Board of Equalization (BOE).

Measure I Funds

Measure I is a half-cent sales tax collected throughout San Bernardino County for transportation improvements.
San Bernardino County voters first approved the measure in November 1989 to ensure that needed transportation projects were implemented countywide through 2010. In 2004, San Bernardino County voters overwhelmingly approved the extension of the Measure I sales tax, with 80.03% voting to extend the measure through 2040.

SANBAG administers Measure I revenue and is responsible for determining which projects receive Measure I funding, and ensuring that transportation projects are implemented.

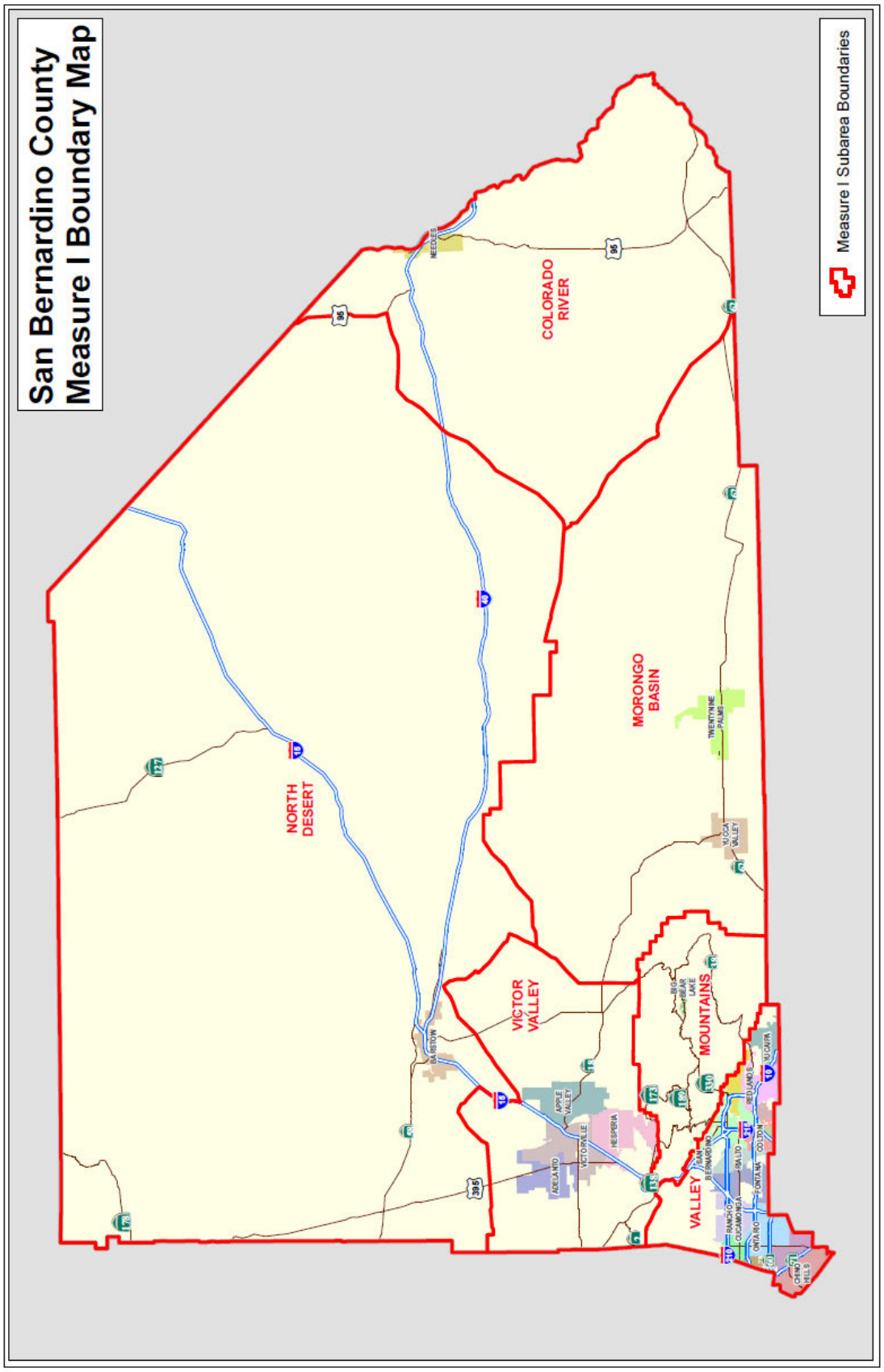
Funds are distributed geographically, with the county divided into subareas, shown in Figure 10-1. Table 10-1 summarizes measure I funding. Measure I funding for Express bus/BRT modes is currently funded at 5% of total revenues and this amount can increase 5% to 10% in 2015, if approved by SANBAG.

10.2 Possible Innovative Financial Strategies

Private Public Partnerships

U.S. DOT cites the following as the six basic examples of PPP with some transit applications.

- **Private Contract Fee Services** – This is a broad arrangement where the private sector can be responsible for a variety of services, such as operations and maintenance (O&M) and management and administration of a public endeavor. Foothill Transit is a good example of this arrangement for overall transit outsourcing by a public entity. A classic transit industry practice is private operation of certain services – specific routes or types of bus service; paratransit services; heavy maintenance activities or even fare and revenue collection and management. In Southern California, Los Angeles County contracts for part of the Catalina Ferry service as part of its public transit program. The Metrolink system contracts out all operations for the SCRRA commuter rail operation.



Source: SANBAG, 2009.

Figure 10-1: Measure I Sub Areas

Table 10-1: Measure I Funding Estimates

	Estimate of Measure I Revenues for Valley and Mountain/Desert Transit Programs ($1,000)							
	Valley Transit Programs			Mountain/Desert Senior and Disabled Transit				
	Metrolink	Express Bus/BRT	S&D Transit	Colorado River	Morongo Basin	Mtns.	No. Desert	V. Valley
FY 10/11 - FY 14/15	34,678	8,669	34,678	67	564	486	652	2,922
FY 15/16 - FY 24/25	77,441	34,819	77,441	111	1,401	1,213	1,390	7,932
FY 25/26 - FY 34/35	99,890	62,432	99,890	98	2,075	1,808	1,688	13,143
TOTAL	212,009	105,920	212,009	276	4,040	3,508	3,730	23,997

Source: SANBAG, 2009.

- **Design-Build (DB) –** This arrangement combines two services that are traditionally separated into a single process, project design and project construction, into a single continuous contract. The public will retain ownership of the facility and operate the facility. The Minneapolis Hiawatha LRT is an example of this concept. In Southern California, the Los Angeles County MTA's Mid-Cities Exposition LRT and Gold-Line LRT are both examples of this arrangement. Both Houston's MTA and Denver's RTD are advancing transit projects under this concept.

- **Design-Build-Operate-Maintain (DBOM)** - This arrangement is a further development of the DB into one where the private entity designs, builds, operates and maintains the facility under contract to the public sector. The public sector is responsible for financing the project. The 21-miles Hudson-Bergen LRT in New Jersey is a DBOM project.

- **Long-Term Lease Agreement** – In this arrangement typically a public facility is leased to a private firm for a specific period and considerations, such as an up-front concession fee or long-term payments. The private firm collects revenues and maintains and operates the facility to set standards. Fees or payments charged to users reimburse the private investment. There is no good U.S. transit example for this arrangement. It has only been applied to existing toll roads sold to private investors and some airport cases (e.g. the Chicago Skyway, the Indiana Toll Road and proposals to sell off the Pennsylvania Turnpike and Florida's Alligator Alley Toll Road and recently the City of Chicago turned Midway Airport over to private investors under this concept.)

- **Design Build-Finance-Operate (DBFO)** – This concept goes one step beyond the DBOM example and requires to private sector to finance the project as well. Again, user fees, typically toll road charges reimburse the private investors over a set time-period. There could be public sector grants to the project from taxes, right-of-way or in-kind support. In the U.S. this example has been applied to the Dulles Airport Toll Road in Northern Virginia. Florida is proposing several road projects that fall under this concept (I-595 HOT lanes and the Port of Miami tunnel). There is no transit example in the U.S. However, a foreign example is in Dublin, Ireland where the region's LRT system (LUAS) is being developed under this arrangement. The government

guarantees a return to the private sector based on an assumed cost to build and operate the facility. If farebox or other revenues collected by the private operator fall below set indicators then government subsidies the difference. Financing and O&M costs are borne by a private entity that designed and built the system to government specifications as set-up by the Dublin Transit Office (DTO) and the Rail Procurement Agency (RPA). At the end of a period (30-years) the facility reverts to full public control. Tax laws and government practices influence the viability of this arrangement.

- **Build-Own-Operate (BOO) –** In this arrangement the government grants the private sector the right to design, build, operate, maintain and own a facility in perpetuity (or a very long-term). Usually the private sector initiates this concept. The Las Vegas Monorail system is an example of this concept and is owned and controlled by the Las Vegas Monorail Company, a private venture, but incorporated as a non-profit entity, permitting government assistance in bond financing by the State of Nevada. BOO was common in the late 19th and early 20th centuries to develop railroads and street car systems throughout the United Sates.

Facility Naming Rights

Naming rights are an interesting and innovative method to raise capital funds, long-term O&M funds or a blend of the two for transit projects. Common in the sports world internationally through naming rights to stadiums and sponsorships of all types of highly visible sporting events, public transit in the U.S. and abroad have sought to use techniques from this concept in the development of new transit facilities and to maintain older ones. Below is an overview of some specific examples.

- **Dubai Metro – United Arab Emirates[12] –** Dubai's Roads and Transportation Authority (RTA) will open the first line of the Metro rail system in late 2009 and the second in 2010 with continuous expansion programmed through the decade. The system capital costs are estimated at $5-6 billion.

  Twenty-three (23) of the 47 stations on the two lines were opened for naming rights purposes. The RTA gained nearly $500 million in revenue from sponsorships, which in some cases included the private sector actually building the stations. Many major developers along the line were successful bidders. Terms and conditions of the arrangements were not open and it is not clear how long the rights are in place or how payments are structured. Needless to say the real estate development climate and need for development exposure are important in influencing the number of bidders and their investments in the corridor or at a specific location. Thus, shopping developer interests bid for stations near their properties and office space, banks, airline and hotel interests did likewise, tying a station to their buildings or commercial activity.

- **Cleveland Silver Line – Euclid Avenue BRT – Cleveland Ohio [13]–** In 2008, the Regional Transportation Authority (RTA) for greater Cleveland developed a substantial 10-mile BRT facility through the city's eastside that serves the region's main hospital complex. The Cleveland Clinic Foundation and University Hospitals of Cleveland have sponsored the facility now known as the "Health Line." There is a 25-year agreement that will generate $250,000 yearly in revenue to help RTA

[12] Dubai Gulf News, 22 December 2008
[13] The RTA Letter – Volume 91, Issue 2

maintain the corridor and provide amenities. The total sponsorship will contribute $6.25 million toward facility operating and maintenance costs. There is a special logo for the facility and it will appear on the 32-stations and 21-buses dedicated to the corridor.

- **TECO Streetcar –Tampa, Fl**[14] – Tampa Electric Company (TECO) is paying $1 million over 10-years for naming rights to the City's 3.5 mile streetcar system. Time-Warner and Sun-Trust Bank both obtained car naming rights for $250,000 each for 10-years. The streetcar system opened in 2002 and is operated by the Hillsborough Area Regional Transit (HART) Authority, but owned by a special non-profit foundation. Stations on the line are available for individual sponsorship of $100,000 annually for a 10-year term. Purchasers had 3-years to complete payment to HART. The trolley website identifies sponsors. Rights have been sold at 8 of the 10-stations. The line connects Tampa's business district with its convention center, port and tourist oriented Ybor City historic district. Because the trolley is under the control of a non-profit foundation, sponsors get state tax credit for 50% of their contribution.
- **Las Vegas Monorail – Las Vegas Convention Center Station – Las Vegas, NV**[15] - Nextel Communications sponsors the Convention Center station of the privately funded and operated Las Vegas Monorail system. The naming rights cost $50 million for 12-years at the nation's largest Convention Center.
- **River Rail – Little Rock, Arkansas**[16] – Opened in 2004, this 2.5 mile street car has 11 stations. The entire line, individual stations and streetcar vehicles are available for sponsorship. Naming rights for the entire line are available for $1 million for a 10-year period; street cars cost $250,000 each for a 10-year period; and stations cost $100,000 each for a 10-year period. To date only 3-stations have been successfully tendered. Sponsors will be able to have private use of the facility a few times a year for special events.
- **Rapid Ride Bus Line – Albuquerque, NM**[17] **–** In 2004 the transit authority opened an 11-mile BRT with 28-stops. Sponsorship of 23 individual stops is on offer, but there has been limited interest to date. Funds will go to defray O&M costs.

Advertising and Sponsorships

Some transit systems have created very innovative and aggressive advertising campaigns with fixed guideway elements. Some examples of innovative advertising efforts are cited below.

- **The Trolley – Galveston, Texas –** The system yields about $100,000 monthly in advertising revenue from car interiors and exteriors. Vehicle wraps are also available. The Trolley serves a very active tourist area and market.
- **Tri-Met - Street Car and LRT - Portland, Oregon** – Sponsorships raise nearly $200,000 toward O&M costs of $2.4 million annually. Streetcar sponsorship is $15,000 yearly with the sponsor's name and logo on the vehicle. A station sponsorship is $400 per month, or $500 a month for two stations. The sponsor's name and logo appear on the station.

[14] Toronto Transit Commission (TTC), August 28, 2008, Report – Sale of Naming Rights for TTC Stations and Transit Lines.
[15] Ibid
[16] Ibid
[17] Ibid

Bulk Ticket Sales

In Seattle, one of the ideas to obtain revenue for a new street car line was to offer bulk sales to institutions and users along the line to raise fare box revenues for the new street car. The report noted that typically these are system-wide efforts, but given the nature of the transit line, specific sites might be interested in a street car specific prepaid bulk fare arrangement. They noted that when coupled with changes in parking policies and parking rates, the fare program could both induce transit ridership and raise revenues. The study cited the following[18]:

- **The Trolley – Galveston, Texas -** The University of Texas Medical Center pays the Galveston Trolley $250,000 annually for free service to patients and employees. The Port of Galveston pays $300,000 annually for passes on the trolley for cruise ship passengers to tour the city. Merchants and social service agencies along the corridor also buy tickets for customers and employees.
- **Memphis Trolley – Memphis, Tennessee –** The Convention Center purchases bulk tickets for convention attendees allowing them to use the streetcar which links the convention center and the city's tourist area along Beale Street**.** Memphis is not a major convention destination and revenue has not been great.
- **University Pass Sales – varied sites –** Several universities such as the University of Colorado in Boulder, the University of Washington in Seattle, and an example from Halifax, Nova Scotia were cited for bulk pass sales to colleges. These bulk sales can be system-wide or limited to one facility or a specific shuttle service. The University of Washington combined bulk sales with changes in on-campus parking policies resulting in a surge in transit use. Recently the University of Miami (Florida) Medical Center undertook a similar program, with increases in parking fees and bulk purchase of transit passes, resulting in increased transit use.

Operating Endowment

This is an unusual arrangement where a large amount of capital is set aside with interest and other earnings dedicated towards operating the transit line or public facility. Extensively used at universities, colleges and charitable institutions, use for public transit service is innovative. A business improvement district (BID) could act as a foundation or be a major source of endowment funds. The prime example is the endowment set-up for Tampa's TECO streetcar.[19]

- **TECO Streetcar –Tampa, Fl** – Tampa Electric Company (TECO) established a non-profit foundation to operate the street car. As a non-profit charitable foundation there are a number of tax benefits to this arrangement. A separate board governs the operation, which is contract to the local public transit operator, HART. An $8 million endowment was created to cover O&M costs after accounting for other revenues. Contributions to the foundation were tax-deductible and came from major corporate sources. Endowment income is dedicated towards system O&M costs. The concept has had success, but recently O&M costs are exceeding endowment income and the foundation has used principal to maintain service[20].

[18] Michael Mann, City of Seattle Office of Policy and Management, Summary of Financing Options for South Lake Union Streetcar, April 4, 2005

[19] Ibid

[20] Ibid

Leverage Revenues for Equity Investment

The impetus to build street cars and downtown transit malls or guideways is often connected to urban redevelopment as much as transit service. Therefore, the creation of Program-Related Investments (PRIs) could be a financing vehicle. Improvement beneficiaries or non-profit interest groups can act as investors in the project with promise that the improvement will repay the private investors. Since these are typically foundations or other non-profit groups – long-term repayment of private loans or other equity can be structured to guarantees financial returns at a lower cost than other financing mechanisms. The interest groups can use the benefit of the improvement in a faster and less costly way than typical financing. Usually non-profit foundations invest in housing, historic buildings, open space, conservation areas, etc. But transit investment could be a use of these instruments. A BID could act as the investor. In Houston and Philadelphia, BID's backed bonds that were used in transit improvements created in their districts. Economic development agencies could also carry some of the investment effort. BID's have been important in New York MTA's restoration efforts at many subway stations through financing the improvement. No BID or non-profit investment in a BRT is reported, but the mechanism could help local property owners and other interests to directly invest in improvements that will increase their business and property values through capital investment and improved transit service.[21]

[21] Ibid

10.3 Revenue from Development and Transit Oriented Development (TOD)[22]

This description of potential Transit Oriented Development (TOD) schemes is taken from Mass Transit Magazine cited below. It is a concise statement of potential strategies to raise revenue from land use tie-ins and TOD in connection with transit infrastructure development. The 10-points below outline various development opportunities that the authors deemed interesting possibilities for revenue generation in conjunction with new transit facilities.

Overview - One of the most powerful techniques to solve any "gap financing" requirements is to optimize non-tax income generated by government-owned land serving as the TOD site and from any proposed public facilities on site.

Land Leases to Developers

Public partners should view their real estate assets as a potential major source of income. Under a land lease arrangement, the government entity, or public partner is able to retain ownership of the project site and also realize any appreciation in land value achieved to date and in the future. Developers like land lease arrangements because they can avoid upfront cash outlays required to purchase a TOD site. Depending on the results of preparing a developer pro forma, the public partner, and their consultant should structure a land lease, which includes up to nine types of land lease payments paid by the selected developer to the public partner, the land owner. The nine types of land lease payments include: 1)

[22] A 10-Part TOD Finance Plan, Mass Transit Magazine June 2007 by John Stainback, President/CEO of Stainback Public/Private Real Estate, LLC (SPPRE) and. Will Reed, Vice President for finance with SPPRE.

construction rent, 2) base rent, 3) index rent, 4) participation rent, 5) participation in any sale proceeds, or refinancing, 6) maintenance, operation and security (MOS) payment, 7) home-run insurance, 8) land lease payouts, and 9) interest income.

Public partners should also be able to generate non-tax income, or operating income from any on-site public facilities. Many public facilities throw off traditional operating income, such as user fees, or admission charges, but there are other creative types of operating income that can be realized. These more creative types of income include:

- Introduce complimentary retail space, such as a coffee shop or café.
- Lease advertising space in appropriate areas of the facility.
- Lease naming rights.
- If the facility or system is large enough, lease pouring rights.

Public partners should also consider leveraging selected types of non-tax income generated by the proposed commercial development and public facility. The land lease payments which are not contingent on developer performance can be used to cover the debt service on a revenue bond. For example, the base rent described above can often be structured to be a guaranteed annual payment by the private developer to the public owner of the project site. The revenue bond supported by the base rent can be used to cover all, or a portion of the cost of the transit station and/or any transit improvements required by the TOD. This revenue bond is often referred to as a land lease-backed revenue bond.

The use of air rights over stations, maintenance yards, and parking facilities is common. Los Angeles transit agencies are seeking developers for air rights at Metrolink's Taylor yard facility and the MTA for its Red Line yard. In Chicago an old Chicago Transit Authority rail yard's air space is now becoming a mixed-use development. Small scale examples are very common at commuter rail stations, LRT stations, and metro stations, as well as, yard and garage sites.

Tax Revenue Generated by the Project

Another important source of income from a TOD is the multiple types of tax revenue generated by commercial leasehold improvements developed on government-owned land. In addition, if the project site is owned or purchased by the private developer, the land will generate property tax annually. Depending on the building types included in the commercial development portion of the proposed TOD, projects will generate substantial tax revenue, such as:

- Property tax
- Personal property tax
- Sales tax
- Hotel occupancy tax
- Corporate income tax
- Local and state income tax
- Utility taxes

In most instances, these taxes are distributed to varying government jurisdictions, such as the city, county and state, as well as school districts and other government entities. For most public/private development projects, the focus is on capturing the property and sales tax generated by the commercial development portion of a TOD. One of the most powerful economic development tools available to public partners is tax increment financing (TIF). TIF is an economic development tool available to a city (a potential partner with a transit agency) to publicly finance specific needed improvements consisting of, but not limited

to, buildings, streets, parks and other improvements within a defined area commonly known as a TIF District.

TIF is not a new or additional tax imposed by a government entity. Therefore, citizens and property owners are not required to pay any new or additional tax. If the city is the primary public partner, city officials and their consultant will need to determine the annual tax revenue generated by the redevelopment project for each government entity. Using the results of this analysis, city officials should approach each entity receiving tax revenue from the project to negotiate using their respective portion of the property and/or sales tax increment. City officials should then leverage their portion, or all of the annual tax increment to support a TIF-backed revenue bond. Like the non-tax income, the tax increment generated by the TOD can be leveraged to fully support a sizeable revenue bond, which covers all, or a major portion of a TOD and transit-related facilities and improvements. In other words, for many TODs the income realized by the public partner can cover 100 percent of the transit facilities, amenities and improvements, so there is little, or no capital outlay required of the transit agency.

Federal Funding Programs

There are a multitude of Federal funding programs available from several agencies. The limitations of this single chapter does not allow a comprehensive listing of funding programs, so the focus will be on programs directly related to TODs. The Federal agencies focused primarily on real estate development include:

- U.S. Department of Housing and Urban Development (HUD)
- U.S. Department of the Treasury
- Federal Housing Administration (FHA)
- Fannie Mae
- Freddie Mac
- Federal Home Loan Bank
- Federal Transit Administration (FTA)

These Federal agencies have established a wide variety of financial assistance techniques, which include:

- Direct investment
- Below-market rate subordinate loans
- Grants (direct investment or as additional security for a loan)
- Interest rate buy-downs on third-party loans
- Loan guarantees
- Soft second mortgages
- Credit enhancement
- Tax credit programs
- Program to increase a homebuyer's purchasing power

Conduits for these funds vary from state and city governments, community development entities (CDE), syndication partners and private developers.

State and Local Funding Programs

Like Federal funding programs, there are a multitude of state, county and local government funding programs and an enormous number of finance instruments. State and local governments have the power to tax and the ability to issue tax-exempt debt. Under the U.S. Internal Revenue code, the interest payments on most debt issued by state and local governments are exempt from Federal income taxes. Based on this policy, investors accept a lower interest rate on tax-exempt municipal debt than on taxable debt. Debt issued by state and local government entities is categorized by the source of revenue pledged to cover the debt service. General obligation (GO) bonds are backed by the full faith and credit of the issuing government entity, while revenue bonds are backed by the pledge of specific

income stream(s) generated by the project. GO bonds are used to finance facilities which are considered essential to a functioning government.

In addition to traditional municipal bonds, state and local governments provide a wide range of financial assistance to finance redevelopment projects or solve the required "gap financing". At last count there are nearly 30 public/private finance instruments available to state and local partners to finance redevelopment projects. Instruments such as:

- Tax increment financing (TIF)-backed revenue bond
- Certificates of participation (COP)
- Assessment district bonds
- Special tax bonds (supported by the levy of special taxes)
- Lease revenue bonds
- Tax lien bonds

In addition, many state governments have established funding programs such as:

- State infrastructure bank (SIB)
- State revolving loan funds
- Economic development programs

Federal, State and Local Operational, Development and Investment Incentives

There are two fundamental types of incentives provided by government entities to private companies: Tax and non-tax incentive programs. Tax related incentives include tax credits, exemptions, abatements and deferrals. Non-tax incentives include: grants, loans and/or guarantees provided directly to private companies or indirectly to communities. The primary objectives of government provided incentives are to create jobs, income and tax revenues, which can be used to improve the quality of life of residents. Incentives can reduce cost and/or enhance cash flow for three aspects of business: 1) development of facilities and infrastructure, 2) investment in facilities, equipment, and/or technology, and 3) business operations.

Tax Credits

Tax credit programs are increasingly important to private developers, and while the limitations of space in this chapter does not allow a detailed description of the tax credit industry, public and private partners of redevelopment projects should be aware of the four primary federal tax credit programs: 1) historic preservation tax credits, 2) federal brownfield expensing tax credits, 3) new market tax credits (NMTC), and 4) low-income housing tax credits (LIHTC).

Transit Station Operating Income

There are at least five types of non-farebox income that transit agencies should attempt to capture in order to enhance cash flow, or solve a financing shortfall. These sources of income other than the farebox include:

- Tenant lease income from support retail space for commuters.
- Income from advertising placed on the exterior and interior of transit stations and commuter parking facilities.
- Income from the shared use of commuter parking facilities.
- Income from naming rights and possibly pouring rights for the entire transit system.
- Interest income from Land Lease Payouts (a payment based on the Present Value of the land lease payment for land under condominium housing developments).
- If the financial feasibility of the TOD and/or transit station is in the balance, these types of non-farebox income could

be the difference between a "go and no-go" decision.

Tri-Party and Public-Public Partnerships

Another source of funding or cost sharing is "Public-Public Partnerships" or Intergovernmental Agreements between a transit agency and other governmental entities, such as a city, county or state governments. If public-public partnerships were structured a transit agency could share the cost, risks and responsibilities for financing, designing, developing and constructing a TOD. Before transit agencies approach a potential public partner, they should document how the TOD will generate economic benefits and improve the quality of life for local residents.

For situations where a transit agency does not own any, or adequate land around a transit station, the agency may have to structure a Tri-Party Agreement between the agency, private landowner(s) and a private developer. If the transit agency does not have sufficient funds to acquire the land, they will need to demonstrate the financial return for the landowner(s) to provide the land in exchange for an equity position in the TOD.

Infrastructure Funds

Over the last few years Infrastructure Funds have been formed in the capital market. Infrastructure funds allow investors to own part of a professionally managed portfolio of infrastructure assets, such as:

- Rail facilities and other transport assets
- Toll roads
- Utilities
- Airports
- Communications assets, such as broadcasting towers
- Materials handling facilities

Most of these funds include one to three asset allocations: transportation, utilities and building development. The five largest funds include:

- Goldman Sachs: $6.5 billion
- Macquarie: $4.0 billion
- Deutsche Bank/RREEF: $3.0 billion
- JP Morgan: $3.0 billion
- CIT Group: $2.5 billion

The Basis for Governments to Receive a Return on Their Investments

Transit agencies and governments across the country have made substantial investment in land, infrastructure and transit systems. Commercial developments at transit stations, or TODs should generate enormous amounts of non-tax income and tax revenue for the participating government entities. In other words, private developers of TODs should provide a competitive ROI to the government entities, which have invested in the land around transit stations, infrastructure required by the TOD, and the transit system. The transit system can be heavy rail, light rail and/or bus rapid transit (BRT). In addition to the major investments made by governments, private developers are achieving premium rental rates for housing, retail and office space at TODs.

Impact and Concurrency Development Fees

A number of jurisdictions have been able to fund significant portions of transit infrastructure requirements through the use of various types of developer impact fees or special assessments that can be used to provide funding (or repay bonds) for major transit facility development. The procedures vary from state to state and are not legally available for use everywhere. California has some significant examples of this type of development. In almost all cases, the impact

fee program is created and managed by the local government with land use powers, not the transit agency. But municipal levies can be transferred to the entity building the project or can repay the local government for contributions or funds given to the transit agency to develop the project. In most places funds can only be used for capital costs. Some examples are summarized below.

City of San Francisco

The City of San Francisco has a general transit impact fee ordinance - Transit Development Impact Fee (TDIF). This assessment based on non-residential development funds both capital and O&M costs resulting from new development and the increased need for capital and increased transit service. This dual nature is unique, but has been upheld in California courts since its adoption in 1981. It funds only the direct local costs for the service or facility impacted. A life-cycle of 45-years is used. The TDIF has gone through extensive legal challenges and minor modifications have been made, but the TDIF has survived all major rulings.[23]

Cities of Portland, Oregon and Seattle, Washington

Both use standard impact fee legislation to fund transit capital projects. The project needs to be part of a planned improvement and the development is then assessed for its impact on that facility – showing a direct connection or "nexus." The development then pays the portion of the impact that the development will have on the proposed improvement. Cities use similar systems to assess impacts for school, public safety and other improvements. In Portland, over $30 million in city funds went to partly fund a light rail line and $7.5 million was given to a streetcar project. The City will repay the debt, while the projects are developed by the Tri-Met Transit District.[24]

Tax Increment Financing

This method has already been described. The growth in property taxes in the impacted area connected to the improvements are dedicated towards repayment of part or all of the costs related to the capital improvement. In Texas, the City of San Antonio is considering this concept to help VIA, the transit district, build a BRT system. In Miami, this concept was used to fund extension of the downtown automated people mover system – Metromover. In Chicago, the City of Chicago allocated $773 million for specific transit improvements to Chicago Transit Authority's infrastructure. Again, the municipal government collects the taxes and works out payment with the transit operator. In Pennsylvania, municipal governments have created Transit Investment Revitalization Districts (TRID) under 2005 state legislation to assist in TOD facility investments. There are numerous examples for transit and other types of public improvements.[25]

Transit Concurrency Fees

This is another type of impact fee. It is used in Broward County, Florida (Fort Lauderdale) to fund capital improvements including bus system growth, expansion of transit support facilities, bus stops, and transit centers. The fee, known as the Transit Oriented Currency (TOC) is levied on new development throughout the county. Fees are adjusted based on planned sub-regional improvements (10-districts) so that the developer impact fee is related to improvements that are connected to the specific development and area. Broward County with about 1.7 million people and a 200-bus transit operation expects to receive

[23] Transit Cooperative Research Program – Legal Research Digest 28, December 2008 – page 11

[24] Ibid. page 12

[25] Ibid. page 23

a few million dollars annually toward transit capital needs. Portland, Oregon has a similar charge known as the System Development Charge (SDC) on new development to develop transit capital improvements. The charge is based on the development's impact on the proposed facility or specific project. Both the City of Portland and Broward County have adopted transit improvement capital plans that legally underpin these assessments on new development. The project program has the capital cost for each project. [26] This permits development impacts to be measured and fees can be calculated on a fair proportional basis. Plans are adjusted about every five years with updated projects and capital costs.

10.4 Financial Projections

Financial Projections were prepared for the LRTP through FY2035 and are shown in Table 10-2. Both historical data and recently prepared short range estimates were used to prepare the forecasts. Given the current economic climate, including the suspension of STA funds, projections were prepared for federal funding and Local Transportation Funds. Measure I, the half-cent sales tax collected throughout San Bernardino County for transportation improvements presented earlier in this chapter, estimates were provided by SANBAG. Federal Funds for New Starts/Small Starts funds are also available for individual projects based on specific requirements. Since these funds are distributed on a project-by-project basis projections are not available for this funding source. It is expected that most capital projects identified in the LRTP would have these funds available to them.

METHODOLOGY

The Financial projections are included in Appendix C and summarized in Table 10-1. The projections were prepared using historical data and short-term estimates to develop straight-line projections through FY2035 for a variety of transit funding sources. Because the current economic recession that started in FY2008 is expected to produce lower than average funding for some years, SANBAG determined that new straight-line projections would not be appropriate at this time.

Instead, SANBAG provided actual numbers for FY2008 and estimates for FY2009 through FY2014. From there the FY2014 estimates were escalated from FY2015 through FY2035 using the historical escalation rate annual percentage of change found in the 2006 report worksheets. Where the percentage of change in the SANBAG estimates through FY2014 and the 2006 report figures for FY2015 differ, the numbers are smoothed over six years. After that the 2006 report figures are used.

Some revenue sources for San Bernardino County are allocated based on urbanized area (UZA). San Bernardino County receives allocations from the Riverside / San Bernardino UZA, the Victorville / Hesperia / Apple Valley UZA and the Los Angeles / Long Beach / Santa Ana UZA.

[26] Ibid. pages 27-29

Table 10-2: Funding Projections

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 25 Years FY 2010-FY2035
FTA Section 5317 New Freedom Funds				
San Bernardino Valley	$2,782,130	$6,153,932	$8,197,128	$17,538,191
Victor Valley UZA	$494,630	$1,096,405	$1,460,427	$3,123,262
FTA Section 5316 JARC Funds				
San Bernardino UZA	$6,859,360	$15,438,585	$20,664,404	$43,958,348
Victor Valley UZA	$1,072,560	$2,413,476	$3,230,415	$6,871,451
FTA Section 5311 Rural Area Revenues				
Rural Areas	$7,508,255	$16,102,540	$20,486,145	$45,186,739
FTA Section 5309 Rail Modernization Funds				
San Bernardino Valley	$26,249,822	$55,210,726	$70,240,779	$160,171,107
FTA Section 5307 Urban Formula Funds				
Hesperia/Apple Valley/Victorville UZA	$16,815,911	$36,033,061	$45,842,365	$101,115,037
San Bernardino Valley Fixed Guideway Formula Apportionment	$33,412,400	$68,437,883	$84,469,679	$191,019,962
San Bernardino Valley Bus Formula Apportionment	$99,174,200	$211,316,230	$268,842,990	$593,933,420
Federal Funds	*$194,549,268*	*$412,202,837*	*$523,434,332*	*$1,162,917,517*
*LTF Funds**	*$398,813,633*	*$852,769,306*	*$1,084,919,268*	*$2,479,614,378*
Measure I Funds	*$82,715,973*	*$201,748,933*	*$281,023,753*	*$565,488,659*
Total Projected Funding	*$676,078,874*	*$1,466,721,075*	*$1,889,377,353*	*$4,130,956,686*

*Does not include County apportionment of LTF.

Source: PP&A, SANBAG, Parsons, 2009.

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Chapter 11 Recommended Long Range Transit Plan

11.1 San Bernardino Valley alternatives

The LRTP aims to provide the best possible future transit network for San Bernardino County. This chapter begins with an analysis of the alternatives studied for the San Bernardino Valley, followed by the choice of the Recommended LRTP for the San Bernardino Valley in Section 11.2. Section 11.3 summarizes the Victor Valley alternatives and chooses a recommended Plan. Section 11.4 summarizes the future of the rural operators in San Bernardino County.

Acknowledging the challenges and opportunities that are inherent in planning for the future, four alternatives were developed for the San Bernardino Valley, and presented in Chapter 5, to provide a range of options for recommending the LRTP. The four alternatives are compared in Table 11-1, which presents the annual boardings and passenger miles as well as capital and operating cost. This table also provides a summary of two performance measures designed to evaluate the relative cost effectiveness of the alternatives.

Table 11-2 presents a summary of the funding projections for the valley and the costs of the alternatives. The funding sources listed in Table 11-2 are limited to sources that are in available funding projections, and don't include possible sources such as FTA 5309 New Starts, STA, CMAQ, STP funds or bonding mechanisms.

The Baseline Alternative assumes the lowest total cost option, provides the lowest level of service to the residents and communities of the valley, and attracts the lowest transit ridership at close to 19 million annual riders. No operational shortfalls are expected for the Base Alternative, as shown in Table 11-2. This alternative has the highest ratio of service for operational costs and the highest ratio of service for capital costs.

The Plan Alternative provides transit service to 34 million annual boardings at double the annual cost of the baseline. Due to the planned implementation schedule of current projects, Table 11-2 identifies funding gaps of $300 million during the 2010-2015 time period and $535 million during the 2016-2025 time period. The table also shows that the funding gap would narrow during the 2026-2035 time period to $155 million. The larger funding shortfall during the early life of the plan occurs because many of the capital projects are phased for implementation in the earlier years. The availability of Federal Small Starts funding for both the Redlands Rail Project as well as the E Street sbX would cover some of the projected funding gap during the early time periods.

The Vision Alternative serves almost 10 million additional annual boardings, as compared to the Plan Alternative, and serves 30 million additional passenger miles annually. The cost is tied for the highest of all four alternatives, and the Vision alternative achieves the second best ridership. For this alternative, the performance measure of operating costs divided by annual riders provides the second highest ratio. Funding projections identify an increased shortfall of funds available for capital projects; however the alternative is operationally affordable. Other funding sources, such as FTA New Starts funds or bonding mechanisms would be needed in order to fund the capital improvements in this alternative.

Table 11-1: SB Valley Alternatives Comparison

Alternative	Annual Boardings	Annual Passenger Miles	Costs ($M 2009)						Annual Boardings per Million $		Passenger Miles per Million $	
			Net O&M		Capital			Total Annual				
			Total	Annual	Total	Fleet	Annual		Total	Operating	Total	Operating
Baseline	18,911,000	81,004,000	1,621	62.3	555.09	188.2	51.7	114.1	165,764	303,352	710,040	1,299,386
Plan	33,664,000	148,764,000	2,355	90.6	1,635.84	353.7	142.8	233.4	144,236	371,731	637,389	1,642,711
Vision	42,381,000	178,332,000	2,627	101.1	3,324.43	482.1	278.9	380.0	111,542	419,393	469,350	1,764,733
Sustainable	45,800,000	200,508,000	2,627	101.1	3,324.43	482.1	278.9	380.0	120,541	453,226	527,715	1,984,182

Source: Hexagon, 2009.

Table 11-2: SB Valley Alternatives and Financial Projections

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 2010-2035
Measure I	$78,023,002	$189,698,002	$262,211,001	$529,935,003
LTF	$290,410,703	$628,916,538	$800,817,777	$1,825,004,607
Federal *	$142,228,090	$301,346,630	$382,174,201	$846,449,921
Total Funding	$510,661,796	$1,119,961,170	$1,445,202,979	$3,201,389,531
Net Operating Costs				
Baseline	$374,041,140	$623,401,900	$623,401,900	$1,620,844,940
Plan	$399,123,820	$872,561,630	$1,082,875,500	$2,354,560,950
Vision (and Sustainable LU)	$399,123,820	$914,317,700	$1,313,942,860	$2,627,384,380
Capital Costs				
Baseline	$125,878,000	$215,730,000	$213,480,000	$555,088,000
Plan	$410,647,000	$782,589,000	$517,102,000	$1,710,338,000
Vision (and Sustainable LU)	$408,313,000	$1,611,864,187	$1,304,252,187	$3,324,429,375
Revenue Surplus (Deficit)				
Baseline	$37,172,478	$336,039,995	$678,561,858	$1,185,627,698
Plan	$(272,679,202)	$(479,978,735)	$(84,533,742)	$(703,338,312)
Vision (and Sustainable LU)	$(270,345,202)	$(1,351,009,992)	$ (1,102,751,289)	$(2,590,253,116)

*Excluding 5309 New Starts Funding.

Source: Parsons, 2009.

The Sustainable Land Use Alternative, which includes the same level of service and costs as the Vision Alternative, looks only at policy changes and higher development densities at locations around transit stations. Consequently, 3 million annual boardings and over 20 million passenger miles are added to this alternative over the Vision Alternative, with the same costs. These increases result from focused population and employment growth along BRT corridors. The funding sources project the same capital shortfall as the Vision Alternative. Because of the higher ridership forecasts for this alternative, the performance measures exceed the values calculated for the Vision Alternative.

11.2 San Bernardino Valley Recommended LRTP

The Sustainable Land Use Alternative provides the most annual boardings and serves the highest annual passenger miles. Additionally, this alternative provides the opportunity to guide development in line with the implementation of SB 375 and provide the communities of the San Bernardino Valley a

vehicle to promote economic development. SANBAG recommends the entire Sustainable Land Use Alternative as the recommended LRTP. SANBAG further recommends that partnering cities adopt policies to support transit as recommended in Chapter 3. It is anticipated that future project development will progress only when the transportation / land use connection is appropriately addressed.

The deficit of the alternative can be addressed by the inclusion of Federal New Start/Small Start funding as well as altering the implementation schedule of the sbX BRT Corridors. Table 11-3 prioritizes the sbX corridors and groups them into funded projects and unfunded projects. Corridor 6 is recommended as a funded corridor to serve the Ontario Airport and the key attraction centers of the Ontario Civic Center, Convention center, and new colony model colony area. The unfunded projects are likely to be funded in future updates of the LRTP as other funding sources become available. Funding for Maglev, High Speed Rail, Aerial Tram to Big Bear Valley and the Metro Gold Line extension to Ontario is not included in this analysis and these projects are currently identified as unfunded.

Table 11-4 shows the financial impact of New Starts funding, including Small Starts funding for the Redlands Rail and the four sbX corridors, and the potential implementation schedule. A funding deficit is shown over the life of the plan that reaches 1.1 billion dollars, when including the total operational cost of the vision alternative. Operational cost of individual capital projects was not included in this study. Measure I funds for Express Bus/BRT, if increased in 2015 to 10% would result in $120,804,000 over the last 20 years of the plan.

Table 11-3: BRT Corridors

	Description	Length (mi)	Stations	Riders	Capital Costs	Potential Implementation Schedule
Funded Corridors						
1	E Street Corridor (to California)	18.3	16	12165	$241.9	2012
2	Foothill Boulevard East	16.6	16	10192	$215.3	2015-2025
6	Holt Avenue/4th Street	20.4	18	6770	$208.4	2025-2035
4	Euclid Avenue to Corona	17.9	14	6508	$180.0	2025-2035
	Total	73.2	64	35635	$845.6	
Unfunded Corridors						
5	San Bernardino Avenue	11	12	6420	$119.2	2025-2035*
3	Foothill Boulevard West	16.2	15	5557	$166.2	2025-2035*
7	Grand/Edison Avenues	17.4	16	2386	$179.4	2035-2045
8	Sierra Avenue	7.6	7	1893	$79.0	2035-2045
9	Riverside Avenue	16.4	16	7342	$174.2	2035-2045
10	Haven Avenue	10.4	10	3361	$109.9	2035-2045
	Total	79.0	76	26959	$827.9	

*If additional funding becomes available.
Source: Hexagon, Parsons, 2009.

Table 11-4: Recommended LRTP

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 2010-2035
Omnitrans Fleet* (exclude NS)	$51,060,000	$143,670,000	$174,500,000	$369,230,000
BRT Corridor New Starts**	$170,650,000	$214,500,000	$346,200,000	$772,050,000
Omnitrans Other Costs	$66,600,000.00	$176,800,000	$251,600,000	$495,000,000
Redlands Rail	-	$240,000,000	-	$240,000,000
Metro Goldline to Montclair		$50,000,000		$50,000,000
Metrolink Extension		$40,000,000	-	$40,000,000
Metrolink Strategic	$120,000,000	$110,000,000	-	$230,000,000
Total Capital Costs	$408,310,000	$974,970,000	$813,000,000	$2,196,280,000
Total Net Operating Costs***	$399,123,820	$914,317,700	$1,313,942,860	$2,627,384,380
Projected Revenue	537,091,618	1,175,171,895	$ 1,515,443,758	$ 3,361,560,638
Projected 5309 Funding of Recommended Corridors****	$75,000,000	$150,000,000	$150,000,000	$375,000,000
Total	$(195,342,202)	$(564,115,805)	$(461,499,102)	$(1,087,103,742)

*Includes ADA Fleet
**E Street without Extension
*** Operating Cost for Vision Alternative.
****Redlands Rail and four sbX Corridors
Source: Hexagon, Parsons, 2009.

11.3 Victor Valley

The three alternatives studied for the Victor Valley were evaluated based on a cost-effectiveness measure, by calculating the ratio of annual boardings over the annual cost of the system. A comparison of the three alternatives is shown in Table 11-5.

The Baseline Alternative serves the least amount of future riders and provides no additional services to future travel markets.

The Plan Alternative serves a larger number of riders, and contains new services that provide additional transit connections. This alternative is also the most costly.

The Vision Alternative serves the largest number of people and reduces the operational cost of the system by restructuring key routes to provide more efficient service.

As shown in Table 11-6, all three alternatives are well within the funding projections, and no shortfall in funding is expected for these alternatives. It is anticipated that only a percentage of the LTF funds will be utilized by the transit network for the area, providing funding for short term services identified in the *Public Transit-Human Services Transportation Coordination Plan.*

Table 11-5: Victor Valley Alternatives Comparison

	Daily Boardings	Passenger Miles	Annual O&M Cost (Million $)	Daily Boardings / Annual Cost	Passenger Miles / Annual Cost
Baseline Alternative	4,556	17,109	4.95	920	3,456
Plan Alternative	8,779	45,763	8.25	1,064	5,547
Vision Alternative	9,445	51,485	8.08	1,169	6,372

Source: Hexagon, 2009.

Table 11-6: Victor Valley Alternatives Costs and Financial Projections

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-FY2035
Total Federal Funding	$21,846,074	$41,086,975	$52,434,927	$115,367,976
Total LTF Funds	$89,811,125	$151,358,521	$192,562,954	$433,732,600
Measure I Funding	$2,921,001	$7,932,000	$13,142,001	$23,995,002
Total Funding	$114,578,200	$200,377,497	$258,139,881	$573,095,578
Net O&M Cost				
Baseline	$49,510,000	$82,520,000	$82,520,000	$214,550,000
Plan	$50,830,000	$91,790,000	$100,630,000	$243,250,000
Vision	$50,740,000	$91,160,000	$99,400,000	$241,300,000
Capital Cost				
Baseline	$29,250,000	$39,082,500	$39,082,500	$107,415,000
Plan	$31,250,000	$48,082,500	$51,682,500	$131,015,000
Vision	$31,250,000	$48,982,500	$53,482,500	$133,715,000
Revenue Surplus (Deficit)				
Baseline	$35,818,200	$78,774,997	$136,537,381	$251,130,578
Plan	$32,498,200	$60,504,997	$105,827,381	$198,830,578
Vision	$32,588,200	$60,234,997	$105,257,381	$198,080,578

Source: Parsons, 2009.

The Vision Alternative, as the highest ranked alternative, is the Selected LRTP for the Victor Valley. Victor Valley is a key growth area in the county and with the implementation of SB 375 it is unclear what effect the legislation will have on the development patterns of this valley. Transit's role in providing a choice in mobility to residents of the valley is expected to remain a challenge, and due to the low density nature of the Victor Valley, new services will be implemented primarily as they become feasible in the short range planning process.

11.4 Rural Transit Operators

The Rural Transit Agencies of San Bernardino County each operate in unique circumstances from the remainder of San Bernardino County. The operating characteristics of each service are dependent on local land use patterns and short range planning opportunities. The LRTP assumes that operational costs will remain similar to 2008 levels with fleet replacement as the only substantial capital costs identifiable in the long term. Table 11-7 provides a summary of costs and funding sources for the rural operators. All costs are shown in Year 2009 dollars, and Measure I and LTF funding are both distributed geographically. The County portion of the LTF is distributed based on 2007 distribution percentages to the transit agencies to cover any projected shortfalls as needed. Federal 5311 funds are distributed to the Victor Valley and to the rural transit operators by population.

Needles Transit Authority is projected to operate in the short term in a deficit of $1.3 million dollars, but over the life of the plan remains viable. MBTA is projected to operate in a $14 million surplus, and not receive any portion of the county's LTF. MARTA is expected to operate in a deficit of $42 million

over the life of the plan, due to high operating costs and low regional LTF distributions. However, the county LTF distribution could rise to 20% for MARTA, which would result in a $10 million surplus over the life of the plan and leave the County LTF Funding source with $168,155,362 over the life of the plan. BAT is expected to operate in a shortfall the first 15 years of the plan and overall operate with a $6.7 million surplus. In summary, there are enough funding sources to ensure the current levels of transit services over the life of the plan.

Table 11-7: Rural Transit Operators

	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-FY2035
NAT				
Operating and Fleet Costs	$2,960,672	$3,175,190	$3,175,190	$9,311,052
Measure I Colorado River	$66,793	$111,456	$98,011	$276,260
LTF	$1,127,647	$2,442,041	$3,109,523	$6,679,211
Federal 5311 Funding	$12,751	$24,416	$31,090	$68,257
County LTF Distribution	$454,103	$991,855	$1,262,958	$2,708,916
Surplus/(Deficit)	$(1,299,377)	$394,579	$1,326,391	$421,592
MBTA				
Operating and Fleet Costs	$9,680,583	$19,361,166	$19,361,166	$48,402,915
Measure I Morongo Basin	$563,837	$1,401,377	$2,074,700	$4,039,913
LTF	$9,560,616	$20,704,523	$26,363,674	$56,628,813
Federal 5311 Funding	$245,907	$470,884	$599,590	$1,316,382
County LTF Distribution				
Surplus/(Deficit)	$689,777	$3,215,618	$9,676,798	$13,582,193
MARTA				
Operating and Fleet Costs	$11,731,781	$23,463,562	$23,463,562	$58,658,905
Measure I Mountains	$485,691	$1,213,444	$1,808,469	$3,507,604
LTF	$1,214,838	$2,630,863	$3,349,955	$7,195,657
Federal 5311 Funding	$23,680	$45,344	$57,738	$126,763
County LTF Distribution	908,206	1,983,710	2,525,915	5,417,833
Surplus/(Deficit)	$(9,099,365)	$(17,590,200)	$(15,721,484)	$(42,411,049)
BAT				
Operating and Fleet Costs	$13,859,071	$27,718,142	$27,718,142	$69,295,356
Measure I North Desert	$652,445	$1,390,286	$1,687,508	$3,730,240
LTF	$4,651,178	$10,072,618	$12,825,758	$27,549,553
Federal 5311 Funding	$158,474	$303,459	$386,403	$848,335
County LTF Distribution	6,951,275	15,183,011	19,332,971	41,467,258
Surplus/(Deficit)	$(1,445,699)	$(768,768)	$6,514,498	$4,300,431

Source: Parsons, 2009

.

Chino

Feb-92

Maximum Density

Residential Densities up to 24 DU/AC

Transit Policies

Action A3-4.1.2 Shuttle Service. Develop and offer incentives to employment centers which provide, operate, and maintain shuttle service from local Park-and-ride facilities, the Montclair Transcenter, and possible future commuter rail terminals, to the City's civic center area.

Action A3-4.2.1 Ridesharing Match Service. Require employers with 100 or more full-time employees to participate in ridesharing matching services as a condition of business permit approval and business licensing. Participation includes: land dedications for park-n-ride facility, in lieu fees, and active employee encouragement programs.

Action A3-4.2.2 Shuttle service. Require employers with 100 or more full-time employees and major retailers to provide shuttle service from local park-n-ride facilities to the employment or shopping center.

Action A3-5.1.2 Fee Assessments. Establish fee assessments for new development projects not providing transit facilities; base fees on anticipated transit trip generation. Encourage employers to pay for transit passes for their employees who agree not to drive to work.

Policy P3-4.1 TDM Facilitators, Inducements, and Infrastructure Require all new industrial and commercial developments to be aware of and, as appropriate, participate in TDM programs.

Parking Management Strategies

Action A3-4.1.5 Park-n-Ride. Investigate the possibility of locating park-n-ride or similar facilities along SR60, SR71 and the Euclid Avenue corridors. Possible sites could include existing parking structures and surfaces which are utilized mainly during evening or weekends, (e.g. fraternal meeting houses, religious facilities, movie theaters, or public properties). Establish a program to assess fees for the land acquisition, construction, and maintenance of such parking facilities if none currently exist.

Action A3-4.1.6 Park-n-Ride Facilities. Require large developments (commercial or industrial development with on aggregate of 100 or more employees) to either dedicate land or participate financially to assist in the development of future park-n-ride facilities.

TOD Policies

The City's overall land use pattern shall street higher density development in the Central portion of the City and along Euclid Avenue, and lower density development in the outlying areas.

Higher density residential development shall be located conveniently to major circulation and transportation corridors such arterial streets. Densities shall, in general, decrease as the distance from major arterials increases.

Shopping areas which serve a community-wide function shall be located close to or along Central Avenue. Shopping centers which serve the daily shopping needs of an immediate neighborhood shall be located away from Central Avenue, but they should be no closer to each other than one mile...

Urban Design Policies

Action A3-4.1.4 Pedestrian Facilities. Require sidewalks on arterials and other roadways within industrial and commercial areas. Link bus loading bays, employment centers, and employee services (restaurants. etc.) with sidewalks.

Buildings shall be well designed, shall respect the suburban image of the community and shall be designed with an awareness of existing neighboring buildings. appropriate architectural relief will be encouraged, with· large expanses of blank, unrelieved walls being avoided, especially where fronting on a major street.

To the maximum extent possible, land use patterns shall be planned so as to minimize Vehicles miles traveled.

Higher density projects shall be kept to a small scale (number· of units, heights, .etc.) and shall, in general, reflect design characteristics of single family homes.

Growth Management

Regional Coordination

Action A3-5.1.10 SCAG - City of Chino Regional Commuter Rail Study. Work with SCAG to include the Southern Pacific, Chino Branch and the Santo Fe Rail Line in its regional commuter rail study.

Financial Strategies

The City shall work closely with developers "and other interested parties to develop means by which needed capital facilities can be provided on a long term basis at little or no capital cost to the City. This could include the use of special assessment districts, developer reimbursement techniques. Private-public joint ventures, tax increment financing (redevelopment), and the such.

The City shall explore alternative financing techniques which are not subject to the provisions of recent tax legislation such as Proposition 13 and Proposition 4.

Chino Hills	
1994	
Maximum Density	
	Residential Densities up to 35 DU/AC
Transit Policies	
	Local transit services should be expanded to serve more of the residential areas of Chino Hills and provide access to the major new developments to be built under the Land Use Plan. These new local services should include: Service along Peyton Drive from Riverside Drive to Soquel Canyon Road to Central, and along Central Avenue to Chino Hills Parkway; and increased frequency on Omnitrans route #72 along Grand Avenue, Chino Hills Parkway, and Pipeline Avenue. In addition to these local services, regional transit service should be provided to provide transit access to other counties. These regional services should include: Grand Avenue service from Chino to Diamond Bar, passing through Chino Hills; Carbon Canyon Road service from Chino to Brea, including the Brea Mall passing through Chino Hills; The Chino Valley Freeway commuter express service to Los Angeles via SR-60; and Park-and-Ride lots near the Chino Valley Freeway.
Parking Management Strategies	
	Park-and-ride areas shall be provided at village cores, general commercial areas and mixed land use areas. These facilities shall be designed to maximize security and provide ease of access. Each park-and -ride lot shall have a capacity equal to 10% of the required parking of the adjacent commercial area, except that no more than 50 spaces per facility shall be constructed. All park-and-ride lots shall be acquired, constructed and maintained by the appropriate local entity.
TOD Policies	
Urban Design Policies	
	Bus turnouts and bus shelters shall be provided in village core areas and other commercial, industrial and public use areas. These facilities shall be designed to maximize security features and shall be located in proximity to both traffic signals and pedestrian crosswalks, so as to provide for ease of ingress for buses and ease of access for pedestrians, respectively.
Growth Management	
	Policy 1-2. Preserve significant natural features such as ridges, knolls, and vistas, Including those identified on the City of Chino Hills Visual and Scenic Resources Diagram, through special development standards and guidelines.
Regional Coordination	
	Policy 3-8. Work with local agencies and jurisdictions to promote employment growth coordinated with the availability of adequate housing and transportation. Objective 3-1. Continue to strive towards the Southern California Association of Governments (SCAG) projected jobs/housing ratio for the year 2010 for the West San Bernardino Valley, which includes the city of Chino Hills, of 1.16 jobs per housing unit.
Financial Strategies	

Colton	
May-87	
Mixed Use Designation	
	Special Designation – Multi Use area This area has been established along the Mount Vernon corridor for the purpose of creating a long-term vehicle for upgrading the economic and aesthetic environment. The multi-use area designation permits a two-pronged approach by allowing existing parcels to be used for residential or commercial activities subject to aesthetic upgrades and by encouraging more significant residential and commercial projects in the future using density bonuses and design modifications based on the size of the development site. The multi-use designation is not intended to create an immediate or near term transformation of the Mount Vernon Corridor, but rather to establish significant investment and community improvement opportunities which may be eventually realized as surrounding land costs continue to increase.
Maximum Density	
	Residential Densities up to 22 DU/AC
Transit Policies	
	Goal 2: Encourage the use of alternative transportation modes. Policy 2.1: Continue to cooperate with Omnitrans for the provision of public bus service in the planning area. Policy 2.2: Establish bus Shelters at Omnitrans stops to increase public recognition and use of the local and regional transit system. Policy 2.3 Cooperate with Caltrans and the County of San Bernardino in providing sites and improvements for park-and-ride facilities. Policy 2.4: take a leadership role in regional planning efforts to provide community rail service throughout the planning area, while protecting railroad right-of-way. Implementation Measure 3: Transportation Demand Management (TDM): Following the air quality management plan for the south coast air basin, employers of over 100 employees will be involved in a program aimed at reducing the number of vehicles using the roadway system during peak hours though vanpooling , ride sharing, staggered work hours and other methods. Public transportation linkages between residential areas and major commercial corridors are necessary to make purchase opportunities available to all segments of the community.
Parking Management Strategies	
	Implementation Measure 8: Off-street (parking) requirements: the City's Zoning Ordinance includes off-street parking requirements for various types of development, allowances for parking reductions of development incentives where effected demand management programs are utilized, and allowances for joint use of parking facilities where an appropriate mix of land uses exist. Establish minimum improvements and standards, such as off-street parking, to be required on all properties based on the scale of operations and proposed development.
TOD Policies	
Urban Design Policies	
	Well-designed human-scaled commercial developments featuring an attractive and efficient pedestrian environment should be encouraged as they add to the responsiveness of commercial growth to localized needs.
Growth Management	
Regional Coordination	
Financial Strategies	
	The City shall seek and utilize any available Federal funds and programs in implementing qualifying portions of the Land Use Element and other elements of the General Plan. This includes taking advantage of the "Enterprise Zone" designation to be granted along the Agua Mansa and Mount Vernon corridors in the near future.

Fontana	
Oct-03	
Mixed Use Designation	
	Regional Mixed Use (RMU) 0.1 – 1.0 FAR for non-residential; 12-24 du/acre for residential Preferred Mix and Range of Uses: 10-30% retail; 5-15% office; 15-30% light industrial/business park; 25-35% residential; 4-6% public open space.
Maximum Density	
	Residential Densities up to 24 DU/AC
Transit Policies	
	Implement traffic signal systems and intelligent transportation systems (ITS) components (not limited to signal coordination, highway advisory radio, closed circuit television, emergency vehicle signal preemption, etc.) along arterial roadways and sub-areas, in accordance to the City's Traffic Signal System Conceptual Buildout Plan and in compliance with regional and appropriate ITS Architecture Master Plans. To encourage transit ridership and transportation demand management including carpooling, required vanpool parking spaces, plan for the provision of additional transportation centers to be used as a park-and-ride for ridesharing, high-occupancy vehicle lanes, regional bus and passenger rail services. Recognize alternative and private transportation services (vans, buses, shuttles, taxis and limousines) as an integral part of public transportation. Where needed and appropriate, require new development to provide transit facilities and accommodations, such as bus shelters and turnouts, consistent with regional agency plans and existing and anticipated demands. Encourage commuters and employers to reduce vehicular trips by offering incentives such as reduced price transit passes and preferential parking for ridesharing. Provide appropriate transportation terminal facilities for inter-city and regional travel by public and private transportation modes.
Parking Management Strategies	
	Parking areas shall continue to be buffered from the street and provide, where practical, a pedestrian spine for safe access to shopping and activity areas.
TOD Policies	
Urban Design Policies	
	Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values. Commercial and industrial uses adjacent to or within designated corridors shall be developed and revitalized to reflect contemporary design standards as Buildings in activity centers shall be oriented toward major thoroughfares, sidewalks and public spaces with convenient but not visually dominating parking on site. Activity centers should be linked with residential neighborhoods and be accessible by multiple modes of transportation. Areas adjacent to freeway and major arterial corridors shall be given special land use and development standards guidance. Downtown, its Metrolink Station and Transit Plaza, and the surrounding community shall be accessible and connected by multiple modes of transportation including pedestrian, bicycle, transit and automobile. Require street dedications from adjacent properties when the land is necessary for additional transportation capacity and enhanced mobility for the welfare A well-integrated network of bike and pedestrian paths should connect residential areas to schools, parks, and shopping centers Major arterial highways shall be improved according to customized design guidance within and adjacent to public rights-of-way. Adopt arterial streetscape improvement plans as part of the City's Capital Improvement Program and Capital Re-Investment Program. Adopt design guidelines for Foothill Boulevard, Valley Boulevard and Sierra Avenue that incorporate the unique qualities of each thoroughfare.
Growth Management	
Regional Coordination	
	Work with Caltrans, San Bernardino County, and neighboring cities to ensure that functional and aesthetically pleasing design of transportation corridors is consistently implemented (see Action 1, above, related specifically to the I-10 corridor). Continue to coordinate transit planning with the Southern California Association of Governments (SCAG), the San Bernardino Associated Governments (SANBAG), the Los Angeles County Metropolitan Transportation Authority (MTA), the Southern California Regional Rail Authority (Metrolink), Omnitrans and adjacent communities. Work with the Caltrans for Transportation Enhancement Activities funding from TEA-21 (Transportation Equity Act, 1998). Coordinate street system improvements and traffic signalization with regional transportation efforts in particular on roadways that are at the City's boundaries, are shared with neighboring jurisdictions, and/or are part of regionally significant corridors including those that are on Congestion Management Plan routes. Continue to support the regional bus system to provide intra-city service, inter-city service to major employment centers, and connection to other regional transportation transfer points.
Financial Strategies	

Grand Terrace		
Dec-88		
	Mixed Use Designation	
		Mixeduse development which can demonstrate superior use of land, more efficient utilization of public facilities, and more effective conservation of natural resources shall be strongly encouraged by the city of Grand Terrace.
	Maximum Density	
		Medium Residential Density - 12 DU/AC
	Transit Policies	
		Public transit will be encouraged by city participation in local and regional transit programs and, by special consideration in large, new developments wherever feasible. Encourage the continuance of a public transportation system that will: 1) provide a viable alternative to the automobile; 2) satisfy the transportation needs of commuters, the economically disadvantaged, the aged, the young, and the handicapped; 3) promote service at a reasonable and equitable cost both to the users and the general community.
	Parking Management Strategies	
	TOD Policies	
	Urban Design Policies	
		Design of new development shall respect and preserve the view opportunities of existing development in the area.
	Growth Management	
	Regional Coordination	
		The city will work closely with the regional transit agencies to ensure the convenient and affordable bus service continues to be available to local residents. Encourage State, regional, and local governments and agencies to achieve a coordinated and balanced regional transportation system consistent with the city's social, economic, and environmental needs and goals.
	Financial Strategies	
		Commitment of public funds to provide necessary off-site improvements for development of vacant private property will consider the net revenue which the development will produce for the city over the time.

Highland
Mar-06

Mixed Use Designation	
	Mixed-Use (MU) Maximum Intensity: 18 dwelling units per 1.0 acre, or 1.0 FAR
Maximum Density	
	Residential Density up to 8 DU/AC
Transit Policies	
	Provide access to multiple modes of travel, including pedestrian, bicycle, transit and automobile. Encourage major employers to reduce vehicular trips by offering incentive concepts discussed in the General Plan Circulation Element, including but not limited to reduced transit passes and preferential parking for ridesharing. Continue to support the regional bus system to provide intracity service, intercity service to major employment centers, and connection to regional transportation transfer points. Work with Omnitrans to ensure that transit services are extended to serve residents in the eastern portion of the study area. Coordinate with Omnitrans to provide safe, clean and attractive bus shelters at bus stops and transfer stations.
Parking Management Strategies	
	Investigate the implementation of Variable Parking District Overlays along Base Line, Highland Historic District and other areas where appropriate, to encourage the enhancement of existing parking-deficient development. Assess the adequacy of existing or proposed on- and off-street parking as needed, especially in urban and commercial areas, to ensure that an adequate supply is provided. Explore strategies for the management of parking supply, which can include parking fees, metered on-street parking and staggered work schedules. Develop strategies for the control of parking demand such as improved transit service, amenities for bicyclists and rideshare vehicles. Develop strategies for shared parking opportunities in mixed-use and multiple-use development. Encourage the use of well-designed, aesthetically enhanced parking structures as an alternative to large, expansive surface parking lots in retail and employment centers. Provide convenient and consolidated parking where cars are screened from view, wherever possible. Segregate residential parking from commercial and office parking. Minimize the visual impact of surface parking by providing berms, landscape buffering and/or locating parking lots to the rear or side of buildings or below buildings. Locate buildings and building frontages close to the street and street corners with parking behind or to the side of the buildings. Where this is not possible or practical, ensure that street-facing parking is shielded through landscaping or berms. Reduce the visual impact of parking through consolidated parking arrangements, shared driveway access, alley-accessed designs, landscape buffers and recessed, covered parking structures. Plan for the provision of areas within the City to be used as park-and-ride regional bus and car pool facilities.
TOD Policies	
Urban Design Policies	
	Prevent future strip commercial development by encouraging lot consolidation within commercially designated areas and by limiting commercial designations to areas of sufficient size to accommodate larger scale, quality development. Connect the Town Center physically and visually with the Historic Village District with pedestrian connections, historically compatible architecture, signage, landscaping and other streetscape elements. Prohibit freestanding drive-through commercial structures and convenience commercial uses, except at the major intersection of Palm Avenue and Base Line. Encourage and improve pedestrian connections from residential neighborhoods to retail activity centers, employment centers, schools, parks, open space areas and community centers. Add raised, landscaped medians and bulb-outs, where appropriate, to reduce exposure to cross traffic at street crossings. Pursue unifying streetscape elements for major corridors, including coordinated streetlights, landscaping, public signage, street furniture and hardscaping. Locate commercial/retail uses near the sidewalk to provide high visibility from the street. In multi-use development, locate retail and commercial development close to street for higher visibility and residential uses behind for convenience and privacy. Provide pedestrian access and connections to nearby retail, transportation, recreation and educational centers, where practical. Incorporate small sitting areas and/or shaded courtyards close to shopping areas but buffered from parking and traffic impacts. Clearly delineate pedestrian routes from parking areas to retail uses to allow easy and safe pedestrian movement.
Growth Management	
Regional Coordination	
	Participate in a wide range of regional transportation planning and programs to improve the capacity, efficiency and safety of the shared circulation system. Participate in all regional transportation committees and regularly coordinate with other local agencies regarding their plans, programs and services that affect the quality and safety of the Highland roadway system. Coordinate street system improvements and traffic signal coordination with regional transportation efforts. Coordinate transit planning with the Southern California Association of Governments, SANBAG, Omnitrans and adjacent communities. Work with the Southern California Commuter Rail Council and the San Bernardino Association of Governments and Omnitrans to establish a transit connection with the Metrolink Commuter Rail System. a new freeway interchange at Victoria Avenue and to facilitate applicable roadway improvements.
Financial Strategies	
	Maximize sales-tax-generating uses through the strategic location of commercial areas, particularly at freeway interchanges, at major intersections, and within the Town Center and Golden Triangle (see also Town Center, Golden Triangle and Victoria Avenue Corridor Community Policy Areas). Encourage an appropriate mix of retail, office and civic uses to ensure the economic viability of the area.

Loma Linda	
Jun-06	
Mixed Use Designation	
	Special Planning Areas A-F, H, I
Maximum Density	
	Residential Densities up to 20 DU/AC
Transit Policies	
	Facilitate the synchronization of traffic signals along Redlands Boulevard, Barton Road, Anderson Street, and Mountain View Avenue. Where a series of traffic signals is provided along a route, facilitate the coordination of traffic signals to optimize traffic progression on a given route. Traffic signalization should emphasize facilitating access from neighborhood areas onto the City's primary roadway network, and should work to discourage through traffic from using local streets. Preserve options for future transit use when designing roadway and highway improvements. When applicable, such as adjacent to E Street Locally Preferred Alternative station(s), include Omnitrans in the review of new development projects, and require new development to provide transit improvements in proportion to traffic demands created by the project. Transit improvements may include direct and paved access to transit stops; provision of bus turnout areas and bus shelters; and roadway geometric designs to accommodate bus traffic. Encourage ridership on public transit through use of City information sources (e.g., City web site, and mail-outs) to provide information on transit services. Require community care facilities and large age-restricted developments (50 units or more, but excluding facilities designed for "active" adults) to provide transportation services for the convenience of residents as a condition of development.
Parking Management Strategies	
	Though pedestrian access is the focus, also provide convenient vehicular parking via nearby parking in an adjacent parking lot located to the side or rear of the building and/or on-street parking (where feasible considering traffic). Permit off-street parking standards to be met with a convenient off-site parking Pursue construction of parking structures within the downtown area to serve projected parking demand and facilitate mixed-use development without the need to meet off-street parking standards on each individual parcel.
TOD Policies	
	Support transit-oriented development in proximity to E Street Locally Preferred Alternative station(s). Such development would include a variety of retail housing, employment opportunity, healthcare, and civic/governmental uses in walking distances of stations to encourage transit ridership and address air quality and traffic congestion concerns. In addition, support integration of E Street Locally Preferred Alternative transit stations into nearby planned developments and attractively landscaped pedestrian linkages interconnecting transit supportive uses to the transit stations.
Urban Design Policies	
	Place commercial and office development so that it has a strong relationship with the street, such as by siting the buildings so that they are close to the street, or for buildings that need to be set back from the street with a large parking lot, locate pad buildings along the street to maintain an attractive street edge and visually buffer the parking lot. Design streets to accommodate slow to moderate moving local traffic (e.g., two lanes maximum each direction) or close streets to provide for pedestrian use only. Thus, through traffic on arterials would be provide on the periphery of pedestrian oriented development. Ensure that the site design of new developments provides for pedestrian access to existing and future transit routes and transit centers through specific review during the development review process. 3.1.1.1 Pedestrian-Oriented Development Guiding Policy For pedestrian oriented development (located within commercial or mixed-use land use designations as indicated in the Land Use Element) ensure that the features that make for attractive and functional pedestrian-oriented development are provided.
Growth Management	
	The Public Open Space land use category applies to lands within the Loma Linda South Hills area that is owned by the City, and intended for long-term natural open space and trails. The intent of this designation is to preclude the development of buildings, and to permit only such improvements and facilities as are consistent with the permanent protection of natural open space. Thus, while recreational trails are encouraged within this area, their design and use is to be consistent with the environmental values of the lands they traverse.
Regional Coordination	
Financial Strategies	
	Attract new, and maintain existing, commercial and office uses to better serve the retail and service needs of the community, to keep the sales tax revenues from purchases by the Loma Linda community from going elsewhere, to reduce the length of trips necessary to meet retail and service needs, and to expand employment opportunities within the community.

Montclair		
Jun-99		
	Mixed Use Designation	
	Maximum Density	
		Residential Medium Density up to 14 DU/AC
	Transit Policies	
		CE-1.1.10. Promote the provision of public modes of transportation between strategic locations such as the Montclair Plaza Shopping Center, and other traffic generators, such as the Montclair Transcenter and potential Metrolink station on the Riverside Line.
	Parking Management Strategies	
	TOD Policies	
		CD-1.6.0. To encourage the development of parcels along Central Avenue and Holt and Mission Boulevards where development has previously been hindered due to parcel size and configuration, access and multiple ownership.
	Urban Design Policies	
		LU-1.5.0. To ensure that commercial areas within the City are conveniently located, efficient, attractive, safe for pedestrian and vehicular circulation and concentrated into districts and centers in order to better serve a larger portion of the City's needs, while also continuing to provide regional commercial services as the dominant proportion of the regional market in recognition of the economic contribution and image identification associated with regional centers. LU-1.1.5. Promote the assemblage of commercial parcels found in strip commercial areas along Central, Holt, Moreno and Mission. LU-1.1.25. Encourage the design of these properties to create an enjoyable environment for shopping by promoting improved architectural appearance of buildings, excellent landscaping, and appropriate regulated signing, parking and traffic circulation. CE-1.1.5. Promote the beautification of streets by promoting and maintaining a tree planting, tree replacement, tree maintenance and landscaping program on all streets, with special emphasis on the entrance to the city, to screen from view service road areas, and along major/minor roadway corridors and median dividers. CD-1.1.1. Continue the establishment of an individual and distinctive identity by encouraging the highest quality design in architecture, landscape architecture, sign graphics, and in the design of street furniture and fixtures.
	Growth Management	
	Regional Coordination	
		LU-1.1.4. Participate in and support the regional activities of the Southern California Associated Governments, the San Bernardino Associated Governments, City/County Planning Commissioners Conference, and other such agencies.
	Financial Strategies	

Ontario		
2005		
	Mixed Use Designation	
		Community Development Element Matrix Section 7.3: Land Use Goals and Implementation Policies Policy 7.3.5.4: Support and encourage development of mixed use projects, which combine residential uses commercial uses in a planned environment
	Maximum Density	
	Transit Policies	
		M3-2 Transit Facilities at New Development. We require new development to provide transit facilities, such as bus shelters and turnouts, as necessary. M3-4 Bus Rapid Transit (BRT) Corridors. We work with regional transit agencies to implement BRT service to target destinations and along corridors, as shown in the Transit Plan. M3-5 Light Rail. We support extension of the Metro Rail Gold line to Ontario, and will work to secure station locations adjacent to the Meredith site and at the proposed multimodal transit center. M3-6 Metrolink Expansion. We advocate expansion of Metrolink service to include the Downtown and and the multimodal transit center. M3-7 High Speed Rail. We encourage the development of high-speed rail systems that would enhance regional mobility in Southern California and serve the City of Ontario. M3-8 Feeder Systems. We work with regional transit agencies to secure convenient feeder service from the Metrolink station and the proposed multimodal transit center to employment centers in Ontario. M3-9 Ontario Airport Metro Center Circulator. We will explore development of a convenient mobility system, including but not limited to shuttle service, people mover, and shared car system, for the Ontario Airport Metro Center. M3-10 Multimodal Transit Center. We will explore development of a multimodal transit center near LAONT airport to serve as a transit hub for local buses, BRT, the Gold Line, high-speed rail, the proposed Ontario Airport Metro Center circulator and other future transit modes. Transit Implementation Work with transit providers to identify and implement appropriate infrastructure improvements and minimize potential impediments to enhance the effectiveness of BRT (Bus Rapid Transit) service in Ontario, including consideration of strategies such as traffic signal preemption and queue-jumper lanes. Evaluate the provision of incentives, such as but not limited to reduced parking standards and density/intensity bonuses, to those projects near transit stops that include transit-friendly uses such as child care, convenience retail, and housing. Establish a development impact fee for the Ontario Airport Center to help fund the intermodal transit center and Ontario Airport Metro Center circulator.
	Parking Management Strategies	
	TOD Policies	
		M3-3 Transit-Oriented Development. We consider the provision of development related incentives for projects that promote transit use.
	Urban Design Policies	
		LU1-3 Mobility. We promote development and urban design that reduces reliance on the automobile and capitalizes on multi-modal transportation opportunities. LU3-2 Design Incentives. We offer design incentives to help projects achieve the Vision. The incentive program is intended to realize improved value, a rich palette of amenities, locational landmarks, and to create identifiable places through the use of the following types of qualities/features: 1. Improved or intensified commercial and/or mixed use developments on the intersections of arterial roadways 2. Innovative site plans and layouts 3. Ideal mixture and placement of uses 4. Residential infill projects near transit facilities, recreational amenities, and/or service and employment centers 5 . Replacement of under-performing, mid-block strip commercial uses with new residential uses or the improvement and/or intensification of existing, mid-block residential uses. 6. Lot consolidation and development of desired projects 7. Residential or employment uses within a five minute walk to transit 8. Shared/consolidated parking facilities 9. Local-serving uses that reduce trips and improve community identity (e.g. day care centers, video rental stores, community centers, or parks) 10. Creation of community activity centers 11. Pedestrian building orientation and design 12. Public plazas The menu of incentives below describes the types of incentives that will be considered in return for the features noted above. 1. Density transfers 2. Combinations of adjoining land use designations (e.g. Low Density and Neighborhood Commercial land use designations) using the combined maximum density as base development ceiling. 3. Minor adjustments of land use boundaries 4. Reduced parking requirements 5. Increased floor area ratio (FAR) 6. Increased residential density 7. Increased maximum height 8. Reduced setbacks 9. Modifications to onsite open space (private and common) requirements CD1-4 Transportation Corridors. We will enhance our major transportation corridors within the City through landscape, hardscape, signage and lighting. CD2-4 Mixed Use, Urban Office and Transit Serving Areas. We require mixed use, urban office and transit serving areas to be designed and developed as pedestrian oriented "villages" that promote a vibrant, comfortable and functional environment. CD2-5 Streetscapes. We design new and, when necessary, retrofit existing streets to improve walkability, bicycling, and transit integration, to strengthen connectivity, and enhance community identity through improvements to the public right of way such as sidewalks, street trees, parkways, curbs, street lighting, and street furniture. CD2-6 Connectivity. We promote development of local street patterns and pedestrian networks that create and unify neighborhoods, rather than divide them, and create cohesive and continuous corridors, rather than independent "islands" through the following means: - local street patterns that provide access between subdivisions, within a neighborhood and discourage through traffic; - a local street system that is logical and understandable for the user. A grid system is preferred to avoid circuitous and confusing travel paths between internal neighborhood areas and adjacent arterials; and - neighborhoods, centers, public schools, and parks that are linked by pedestrian greenways/open space networks. These may also be used to establish clear boundaries between distinct neighborhoods and/or centers. CD3-1 Pedestrian Circulation. We require that pedestrian, vehicular and bicycle circulation on both public and private property be coordinated and designed to maximize safety, comfort and aesthetics. CD3-2 Connectivity Between Streets, Sidewalks, Walkways and Plazas. We require landscaping and paving be used to optimize visual connectivity between streets, sidewalks, walkways and plazas for pedestrians. CD3-7 Transit Stops. We require transit stops be well lit, safe, appealing to and accessible by pedestrians.
	Growth Management	
		LU1-1 Strategic Growth. We concentrate growth in strategic locations that help create place and identity, maximize available and planned infrastructure, and foster the development of transit.
	Regional Coordination	
		LU1-4 Jobs-Housing Balance. We coordinate land use, infrastructure, and transportation planning and analysis with regional, county and other local agencies to further regional and subregional goals for jobs-housing balance.
	Financial Strategies	

Rancho Cucamonga		
Mar-06		
	Mixed Use Designation	
		2.5.3.6 Mixed Use (Probable FAR of 0.40 and Maximum FAR of 1.0)
	Maximum Density	
		Residential Densities up to 30 DU/AC
	Transit Policies	
		3.5.5 We shall pursue trip reduction and transportation systems management measures to reduce congestion on roadways and at intersections. 3.5.8 We shall continue to coordinate with Omnitrans to provide transit service (bus or shuttle) to our major centers of activity, employment, and housing. 6.4.4.3 Require the design of transit stops to be compatible with adjacent development and provide for adequate seating, signage, and shade.
	Parking Management Strategies	
	TOD Policies	
		2.6.1.5.7 Development projects should be designed to facilitate non-vehicular and transit system access and use. 6.4.1.5 Mixed use areas should be developed as higher intensity "urban centers" where there is sensitive integration of land uses, convenient modes of transportation, and a focused "sense of place" that emanates from the architectural and landscape design.
	Urban Design Policies	
		Include an integrated circulation system of arterial access, internal circulation, parking facilities, pedestrian pathways, bicycle routes, transit stops (where applicable), and related signage. It is intended that movement within the entire opportunity area be feasible on site without being forced to use adjacent arterial highways to move to other portions of the mixed-use development. 2.6.1.2.1 Key opportunity areas should be given priority in the further development of the City by focusing City efforts on bringing about their development or conservation, as appropriate, as soon as possible. 2.6.1.3.2 Restrict strip commercial development in favor of more focused commercial or mixeduse centers. 2.6.1.3.3 Commercial and office development should have equally convenient access for pedestrians, bicycles, buses and automobiles. 2.6.1.3.9 Allow medium and high density residential uses along transit routes in mixed-use areas and in the vicinity of activity centers. 3.5.11 We shall require the implementation of sidewalks and paths to enable safe and convenient pedestrian travel within our community. 6.4.1.6 The intersection of Foothill Boulevard and Haven Avenue, extending south to 4th Street, should form the central business hub of the City with higher intensity office, commercial, and public/quasi-public uses. 6.4.4.4 Continue to pursue the placement of public art in prominent locations, particularly along major travel corridors and intersections within the City.
	Growth Management	
	Regional Coordination	
		2.6.1.1.2 Regionally oriented uses should be located near the regional transportation network. 2.6.1.1.3 Access to regional serving uses shall be designed to provide maximum access capability and permit maximum dispersal of traffic.
	Financial Strategies	

Redlands		
1995 Amended Dec 1997		
	Mixed Use Designation	
	Maximum Density	
		Residential Densities up to 27 DU/AC Density Limitation: Under Measure N, a zoning ordinance, no land designated by the General Plan as urban reserve as of June 1, 1987 is to be redesignated for a higher density than one dwelling unit per 14,000 square feet of net site area, except by a four-fifths vote of the City Council with findings of "no significant adverse environmental impact." Current City policy that specifies a maximum density on slopes of 15 to 30 percent at one unit per two and one-half acres and, on slopes exceeding 40 percent, one unit per 10 acres. On slopes between 30 and 40 percent, required site area increases approximately proportionally from five acres to 10 acres per unit depending on slope and soil type.
	Transit Policies	
		5.40a Ensure that employers implement TDM programs to reduce peak period trip generation. 5.40b Cooperate with public agencies and other jurisdictions to promote local and regional public transit serving Redlands. 5.40c Support the Congestion Management Program for San Bernardino County. 5.40e Favor TDM measures that limit vehicle use over those that extend the commute hour. Programs such as ridesharing and public transit reduce overall vehicle travel while flex time and staggered work hours simply shift traffic to less congested times of day. 5.40f Support local feeder bus service to and from current and future regional transit lines. 5.40g Preserve options for future transit use when designing improvements to roadways. 5.40h Work with Omnitrans to plan for local bus routes that are better able to penetrate neighborhoods to improve service for potential riders. Designate local bus routes in Specific Plan areas. 5.40i Future commuter rail services are planned within the Santa Fe rail corridor, with stops at California Street, Orange Street and Mentone Blvd. Improvements to these streets should be planned for feeder transit services, and park-and-ride provisions should be made at these locations. Another logical stop would be at University Street to serve the campus at the University of Redlands. Other potential stops could be at Judson Street and at Crafton Avenue. Residents in these areas might use short, trip commuter rail to downtown Redlands, either to work or shop. 5.40j Work with Omnitrans to plan for bus shelters and turnouts. 5.40k Incorporate bus shelters and turnouts into design and approvals of new developments as necessary.
	Parking Management Strategies	
	TOD Policies	
	Urban Design Policies	
		4.40g Locate high and Medium-Density development near regional access routes, employment centers, shopping areas, and public services. 4.40i Encourage incorporation of residential units in Downtown mixed-use projects.
	Growth Management	
		1A.40 Principle Four Agricultural uses of land are important to the culture, economy and stability of the City of Redlands and shall be preserved to the greatest extent possible consistent with the will of the people as expressed in Proposition R and Measure N, and consistent with the policies of the State of California set forth in Government Code Section 51220. 2.0e Encourage and promote orderly development and growth of urban areas while maintaining and encouraging the best possible use of agricultural land, protecting it against premature encroachment of non-agricultural development. Consider the costs of extending urban facilities and services in the review of urban development.
	Regional Coordination	
	Financial Strategies	

Rialto	
Mar-92	
Mixed Use Designation	
	CD Policy 1.2.3 - In that the mixed use character of neighborhoods may be a positive influence (promoting self sufficiency), as well as a negative influence (sot zoning and incursion of incompatible land uses), the City will discourage such spot zoning and incompatible land uses within its neighborhoods. At the same time, the City will encourage a variety of compatible land uses within walking distance of residential neighborhoods. This may be accomplished by encouraging master planned, mixed use projects which incorporate the basic range of uses, facilities, and services necessary for neighborhoods to sustain themselves. The City shall consider such projects only when accompanied by a design program demonstrating that an innovative urban village concept can be created which meets the objectives of this element.
Maximum Density	
	Residential Densities up to 21 DU/AC
Transit Policies	
	3.2.3.4 Alternative modes of travel such as commuter rail, park and ride facilities, bus transit and bicycle trails shall continue to receive cooperation and support from the City. 3.2.3.5 Ride sharing, flexible work scheduling and telecommuting provisions of the AQMP and CMP shall be supported by the City for its own employees as well as for the major businesses and industries within the City. Goal 5.1. Maximize the benefits of commuter rail service to Rialto. Policies: 5.1.1.1 Work with SANBAG to adopt the commuter rail line plan which includes thirteen stops, thus assuring a stop in Rialto. 5.1.1.2 Plan for a commuter rail station which includes: -Required parking of 300 spaces, -An adjoining transit center convenient for passenger transfer between commuter rail and bus lines, -Shopping and services for commuters adjacent to the station site, and -Maximum accessibility to the Downtown Area. 5.1.1.3 Apply the T – C (Transportation Corridor Zone) provisions' to both midCity railroad lines in Rialto in order to ensure that -Public improvements and other conditions of approval necessitated by development are provided. Goal 6.1.1 Improve public support and use of local Omnitrans service. Policies 6.1.1.1 Provide an Omnitrans terminal at the Commuter Terminal/ Transit Center. 6.1.1.2 Work with Omnitrans to use its Transit Center Terminal as the hub of routes within and through Rialto. 6.1.1.3 Work with Omnitrans to coordinate bus schedules with commuter rail schedules. 6.1.1,4 Continue providing clean and lighted bus passenger shelters. Goal 6.1.2 Recognize paratransit as an important adjunct to transportation services in Rialto. Policies: 6.1.2.1 Encourage major employers to use van pools and other HOVs for home to work journeys, as required by the AQMP. 6.1.2.2 Encourage employers to use vans, small buses and other HOVs to link work places with the Transit Center. 6.1.2.3 Investigate the feasibility of -intra-City van or municipal bus service for shopping, recreation and other transportation needs of residents, workers and the transit dependent.
Parking Management Strategies	
	4.1.1.1 Develop a Parking Management Plan as a tool for assessing Citywide parking supply and demand and meeting changing parking needs as they occur throughout City. 4.1.2.1 Provide priority parking spaces for ride share and HOV (high occupancy vehicles) in transit center parking lots. 4.1.3.2 Require priority parking spaces for ride share and HOV at employment centers, when required by AQMP or CMP. 4.1.3.3 Support additional AQMP and CMP parking standards as required. 4.1.2.1 Monitor Transit Center/Commuter Rail parking to prevent "spill-over" parking by commuters using spaces designated for Downtown business customers.
TOD Policies	
Urban Design Policies	
	Goal 4.1.3 Enhance Riverside Avenue to , be the signature street of the City of Rialto. Policies 4.1.3.1 Create a portal at the City's north west entrance on Riverside Avenue. 4.1.3.2 Provide planted median strips, parkway planting and turning pockets on Riverside Avenue throughout the City. (Refer to the Community Design Element, Chapter VIII, Street Enhancement Program.) 4.1.3.3 Preserve and improve the northern section of Riverside Avenue as an enhancement to some of the City's finest neighborhoods. 4.1.3.4 Prevent strip commercial development and other inappropriate land uses on northern Riverside Avenue which is inconsistent with the goals and policies of the General Plan 1.3.5 Within industrial and commercial developments, discourage rectangular building footprints along street frontages, and encourage the arrangement of structures on the site to allow for adequate visibility of the site, to promote visual interest as well as for security measures. 1.3.6 Encourage and provide for adequate pedestrian and/or bicycle linkages in, and between, commercial areas. 3.1.7 Parking lots at the rear of a commercial development shall not be isolated from the fronts of buildings. Commercial developments shall provide either mid-building pedestrian access or fully treated rear entrances. Delivery areas shall be separated from pedestrian areas. 3.1.8 Rather than relating only the parking lots, commercial projects should also include internal corridors or passages which are not jeopardized by automobile noise and congestion. These should be designed with the type of visual and social elements which can draw the pedestrian from building to building, patio to courtyard. 3.1.11 Bus shelters shall be incorporated in all new commercial and industrial projects, and in all residential, institutional or other developments fronting major highways as defined in Chapter V, Circulation. Bus shelters may also be required in rehabilitation projects affecting existing commercial and industrial projects. 3.1.12 The City will incorporate the construction of bus shelters for existing projects into its capital improvement program.
Growth Management	
Regional Coordination	
	3.2.1.4 Coordinate east-west arterial improvements with the cities of Colton, San Bernardino and Fontana.
Financial Strategies	
	4.1.2.2 At such time as growth and development in the Downtown area make the current inventory of Downtown streetside parking space insufficient to meet the needs of Downtown businesses, additional parking shall be provided in municipal lots adjacent to Downtown businesses. Land acquisition, construction and maintenance of these parking facilities are to be funded by a special assessment district.

San Bernardino		
Nov-05		
	Mixed Use Designation	
		Regional Commercial: Commercial Regional-2 (CR-2) Downtown - "Non-Residential Intensity - 3.0 floor area ratio (4.0 floor area ratio if a vertical mixed use project): Residential Density - 54 dwelling units per acre."
	Maximum Density	
		Residential Densities up to 36 DU/AC
	Transit Policies	
		Goal 5.6 Promote a network of multi-modal transportation facilities that are safe, efficient, and connected to various points of the City and the region. Policies: 5.6.2 Create a partnership with Omnitrans to identify public transportation infrastructure needs that improve mobility. 5.6.3 In cooperation with Omnitrans, require new development to provide transit facilities, such as bus shelters and turnouts, as necessary and warranted by the scale of the development. (LU-1) 5.6.4 Ensure accessibility to public transportation for seniors and persons with disabilities. 5.6.5 In cooperation with Omnitrans, explore methods to improve the use, speed, and efficiency for transit services. These methods might include dedicated or priority lanes/signals, reduced parking standards for selected core areas, and incorporating Intelligent Transportation System architecture. 5.6.6 Support and encourage the provision of a range of paratransit opportunities to complement bus and rail service for specialized transit needs. 5.6.7 Encourage measures that will reduce the number of vehicle-miles traveled during peak periods, including the following examples of these types of measures: -Incentives for car-pooling and vanpooling. -Preferential parking for car-pools and vanpools. -An adequate, safe, and interconnected system of pedestrian and bicycle paths. -Conveniently located bus stops with shelters that are connected to pedestrian/bicycle paths. (A-1) 5.6.8 Promote the use of car-pools and vanpools by providing safe, convenient park-and-ride facilities. 5.6.9 Work with Omnitrans to create transit corridors, such as the one currently being explored on E Street linking CSUSB to Hospitality Lane, to increase transit ridership, reduce traffic congestion, and improve air quality. 5.6.10 Consider the provision of incentives, such as reduced parking standards and density/intensity bonuses, to those projects near transit stops that include transit-friendly uses such as child care, convenience retail, and housing.
	Parking Management Strategies	
		Goal 5.9 Achieve a balance between parking supply and demand. Policies: 5.9.1 Ensure that developments provide an adequate supply of parking to meet its needs either on-site or within close proximity. (LU-1) 5.9.2 Study the parking standards in the Development Code to determine if adequate flexibility is available to accommodate desirable situations, such as shared parking, Corridor Improvement actions, or transit oriented developments. (A-1) 5.9.3 Continue to expand the supply of public parking in offstreet parking facilities in downtown San Bernardino. 5.9.4 Continue to provide an in-lieu parking fee option for developments in the Downtown area to satisfy all or part of their parking requirement through the payment of an in-lieu fee which will be utilized to provide parking in consolidated public parking facilities. 5.9.5 Require that new developments submit a parking demand analysis to the City Engineer for review and approval whenever a proposal is made to provide less than the full code requirement of parking. (LU-1) 5.9.6 Develop parking and traffic control plans for those neighborhoods adversely impacted by spillover parking and traffic. (C-3)
	TOD Policies	
		Encourage mixed use development and pedestrian friendly uses/development adjacent to transit stops. 2.3.2 Promote development that is compact, pedestrian-friendly, and served by a variety of transportation options along major corridors and in key activity areas. (LU-1) 2.4.6 Work with Omnitrans to explore initiatives that promote redevelopment near transit stops in order to encourage transit ridership, reduce vehicular trips, improve air quality, and improve traffic congestion: -Concentrate mixed use development, retail, employment, entertainment, educational, and civic/government uses within walking distance of transit stops. -Explore the use of incentives that can be awarded to projects that provide pedestrian amenities (wide sidewalks, public plazas, seating areas, etc...) and/or include desirable uses located within walking distance (1/2 mile) of transit stops. Incentives may include density bonuses, increases in non-residential floor area, reductions in parking requirements, and modified development standards.
	Urban Design Policies	
		Promote downtown revitalization by seeking and facilitating mixed-use projects (e.g. combinations of residential, commercial, and office uses). Parking should be located to the rear, below, or above the ground floor of the street-facing commercial/office structure. 2.3.1 Commercial centers, open spaces, educational facilities, and recreational facilities should be linked to residential neighborhoods. (LU-1) 2.3.7 Improvements shall be made to transportation corridors that promote physical connectivity and reflect consistently high aesthetic values. (CD-1) 2.4.2 Continue to provide special incentives and improvement programs to revitalize deteriorated housing stock, residential neighborhoods, major business corridors, and employment centers. (LU-3 and LU-4) 2.5.6 Require that new developments be designed to complement and not devalue the physical characteristics of the surrounding environment, including consideration of: -Linkages to pedestrian, bicycle, and equestrian paths. -The use of consistent and well designed street signage, building signage, and entry monumentation. -The location of parking at the rear, above, or below the ground floor of non-residential buildings to enhance pedestrian connectivity. (LU-1) 5.3.3 A well-integrated network of bike and pedestrian paths should connect residential areas to schools, parks, and shopping centers. (LU-1 and CD-3 5.5.5 Provide continuous sidewalks and links to nearby community facilities and retail centers. (LU-1) 5.6.3 Reduce the visual impact of parking areas by utilizing interior courtyard garages, parking structures, subterranean lots, or tuck-under, alley-loaded designs. (LU-1) 5.6.5 Provide convenient pedestrian access from multi-family development to nearby commercial centers, schools, and transit stops. (LU-1) 5.7.2 Orient buildings toward major thoroughfares, sidewalks, and public spaces so that parking is convenient but not visually dominating. (LU-1) 5.7.5 Parking areas shall provide, where practical, pedestrian pathways for safe access to shopping and activity areas that are defined by landscaped planters and incorporated into the parking lot design. (LU-1 5.7.7 Minimize the visual impact of surface parking lots by locating them behind buildings, away from the street or through perimeter and interior landscaping, berming, and small-scale fencing. (LU-1) Purpose: The Corridor Improvement Program is an optional package of policy, regulatory, and incentive programs that, if applied, are intended to stimulate private investment and result in desired development within the Corridor Strategic Areas. This is accomplished by providing optional incentives, in the form of density bonuses and varied development standards, to developments that qualify. While the underlying land use designations still apply, the property owner may request, and the City may choose to apply, aspects of this program to stimulate desirable development. A) Priority Locational Projects are those that: 1) Develop or improve commercial and/or mixed uses on the intersections of arterials, and/or 2) replace strip commercial use with residential uses or improve existing residential uses between the intersections of arterials. -In Priority Locational Projects: mixed-use projects are permitted with a floor area ratio of 2.0 for commercial and office uses and residential density of 24 units per acre. Commercial only projects are permitted at a maximum floor area ratio of 1.5. A maximum height of 3 stories is permitted for projects that combine residential and commercial uses and 2 stories for commercial only projects. Parking areas are required to be located in the rear of the lot with the buildings oriented to the sidewalk. B) Lot Consolidation. Projects that combine parcels are eligible to receive a 2.5% density bonus and a 10% floor area ratio bonus for each lot combined. C) Encourage the development of desired projects or provide public amenities through the use of incentives. The following incentives are not cumulative and the City can choose to award the greatest level of incentives to projects that incorporate numerous desirable features. -Proximity to transit. Projects with a residential component that are located within 500 feet of a designated transit stop are eligible to receive up to a 15% density bonus. Mixed-use projects would also receive a 10% increase in floor
	Growth Management	
	Regional Coordination	
		5.4.3 Continue to participate in forums involving the various governmental agencies such as Caltrans, SANBAG, SCAG, and the County that are intended to evaluate and propose solutions to regional transportation problems. 5.6.1 Support the efforts of regional, state, and federal agencies to provide additional local and express bus service in the City.
	Financial Strategies	

Upland	
Jun-82	
Updates Compiled: Jul 1992	
Circulation & Land Use 1996	
Mixed Use Designation	
	Mixed Use Commercial/Industrial - Redesign industrial/commercial sites, or allow for adaptive reuse of industrial areas through redesignation of land use to regional commercial or industrial/commercial mixed use designation.
Maximum Density	
	Medium Residential Densities up to 20 DU/AC
Transit Policies	
	Public transportation facilities shall be promoted that: (1) provide a viable alternative to the automobile; (2) satisfy the transportation needs of the commuters, the economically disadvantaged, the aged, the young, and the disabled; and (3) promote service at a reasonable and equitable cost to both the users and the general community. Regional commuter rail service shall be encouraged. Increased inter-community and regional bus service shall be encouraged.
Parking Management Strategies	
	Parking concepts that relate to joint or shared parking use to maximize utilization of existing and proposed parking facilities shall be considered. Whenever a development proposed to provide less parking than that required by the City Zoning Code, the applicant for that development shall submit a parking demand analysis to the City Public Works Director for review and approval.
TOD Policies	
Urban Design Policies	
	Provide for the development of Foothill Boulevard frontages for commercial as well as residential uses subject to development standards intended to control vehicular access and improve visual quality of the thoroughfare. Consider the implementation of a variety of Redevelopment Agency incentives within the Foothill Corridor project area. Revise the Zoning Ordinance 8. Establishment of standards to enhance the pedestrian character of streets in the commercial industrial districts including the types of use, architectural design, and siting of structures at the ground floor elevation. Lot Consolidation Program The City, in cooperation with the Redevelopment Agency and local property owners may develop a program for the consolidation of small lots into larger parcels of greater economic viability in the Town Center, in the 7th and 9th Streets study areas, and Foothill Boulevard. This should occur with specific short term development programs for these areas and developer participation. Urban Design Improvements The City shall provide for formulation of Urban Design Guidelines, define a funding program, and implement public space improvements for key activity areas and entry points to the City, as defined by the land use strategy. This will include street trees and landscape, street furniture, lighting, signage, sidewalk and special paving, other pedestrian amenities, and physical integration of individual developments for pedestrian and vehicular customer convenience. Locations for which plans should be prepared and improvements implemented include: -City entries. -Town Center. -Major commercial/industrial corridors. -Foothill Boulevard. -Euclid Avenue. Pedestrian connections shall be encouraged between commercial uses and adjacent residential development through the City site planning review process. Encourage combining vehicular and pedestrian traffic patterns between separate adjoining developments to reduce hard surface aspect along major corridors. All new development shall be encouraged to provide landscaped parkways, appropriate pedestrian amenities and other streetscape improvements that improve the aesthetics of the roadway to both vehicular and pedestrian traffic.
Growth Management	
Regional Coordination	
Financial Strategies	
	Rehabilitation/Renovation Incentives The City shall continue to expand programs of low interest loans and grants for the renovation, rehabilitation, and/or adaptive reuse of existing residential, commercial, and industrial structures. Additionally, the City shall establish educational programs to train property owners and tenants in renovation and rehabilitation construction techniques and provide technical assistance to low income individuals. The latter should include building surveys and improvement specifications by structural and mechanical engineers and architects and construction assistance by contractors. The City should solicit programs of voluntary participation by local architects, engineers, contractors, and construction workers.

Yucaipa		
Jul-04		
	Mixed Use Designation	
		Planned Development (PD). (Future Land Use)
	Maximum Density	
		Medium Residential Densities up to 8 DU/AC
	Transit Policies	
		Identify long-range transportation corridors in conjunction with the plans of regional transportation agencies; develop a program to protect the right-of-way for long range transit corridors. Develop and implement a TDM ordinance Coordinate with Omnitrans for the provision of appropriate public transit routes and issues for the elderly and other city residents. Develop incentive programs for the use of alternative transportation modes such as city sponsored vanpools and other measures such as flexible working hours and four-day work weeks. Design land use patterns in new developments that minimize the number of automobile trips by providing neighborhood shopping facilities and pedestrian and bicycle paths. Because public transit is a vital element in meeting transportation demands in urban areas, the city shall implement the following actions: -Assist Omnitrans and other transit agencies in coordinating the location and scheduling of public transit services and facilities. -Urge the timely extension of public transit between residential areas and industrial/urban employment centers. -Support the establishment of transportation services and public transit between Ontario airport, orange county airport and Los Angeles International airport.
	Parking Management Strategies	
		Designate existing park and ride facilities on the GP circulation maps, work with Caltrans to identify appropriate future park-and-ride facilities, and develop a program to acquire and develop sites for such facilities in areas where there is an identified need.
	TOD Policies	
	Urban Design Policies	
		Adopt regulations encouraging innovative residential development. Continue to use the planning development process to permit flexible design and siting standards such as setbacks, yards, and building relationships. Promote clustering as a means of achieving more efficient housing construction and providing larger areas of common open space. Establish a system to award density bonuses in return for special design, infrastructure improvements, extra amenities, useable open space or other developer efforts. Encourage the design and implementation of land uses, development standards, and capital improvement programs which maximize the use of public transit.
	Growth Management	
		Utilize the provisions of the Williamson act to further the preservation of commercially viable agricultural open space. Require site development plans to provide adequate sidewalk and safe pedestrian trails.
	Regional Coordination	
	Financial Strategies	

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Appendix B – Transit Riders Survey

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FTA Section 5317 New Freedom for San Bernardino Valley

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
San Bernardino Apportionment	$ 188,568	$393,532	$ 405,000	$ 421,000	$ 437,000	$ 454,000	$ 472,000	$ 490,000	$ 508,130	$ 526,423	$ 545,374	$ 564,462
% Change Year to Year Prediction			2.9%	4.0%	3.8%	3.9%	4.0%	3.8%	3.7%	3.6%	3.6%	3.5%

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$ 55,245	$ 68,385	$ 71,800	$ 74,600	$ 77,600	$ 80,700	$ 83,900	$ 87,300	$ 90,530	$ 93,789	$ 97,166	$ 100,566
% Change Year to Year Prediction			5.0%	3.9%	4.0%	4.0%	4.0%	4.1%	3.7%	3.6%	3.6%	3.5%

Total San Bernardino County Total 5317 New Freedom Funds

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
San Bernardino Valley	$ 188,568	$ 393,532	$ 405,000	$ 421,000	$ 437,000	$ 454,000	$ 472,000	$ 490,000	$ 508,130	$ 526,423	$ 545,374	$ 564,462
Victor Valley UZA	$ 55,245	$ 68,385	$ 71,800	$ 74,600	$ 77,600	$ 80,700	$ 83,900	$ 87,300	$ 90,530	$ 93,789	$ 97,166	$ 100,566

FTA Section 5317 New Freedom for San Bernardino Valley

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
San Bernardino Apportionment	$ 584,218	$ 604,082	$ 624,620	$ 645,233	$ 665,880	$ 686,523	$ 707,118	$ 727,625	$ 747,998	$ 768,194	$ 788,935	$ 809,448
% Change Year to Year Prediction	3.5%	3.4%	3.4%	3.3%	3.2%	3.1%	3.0%	2.9%	2.8%	2.7%	2.7%	2.6%

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$ 104,086	$ 107,625	$ 111,284	$ 114,957	$ 118,635	$ 122,313	$ 125,982	$ 129,636	$ 133,266	$ 136,864	$ 140,559	$ 144,214
% Change Year to Year Prediction	3.5%	3.4%	3.4%	3.3%	3.2%	3.1%	3.0%	2.9%	2.8%	2.7%	2.7%	2.6%

Total San Bernardino County Total 5317 New Freedom Funds

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
San Bernardino Valley	$ 584,218	$ 604,082	$ 624,620	$ 645,233	$ 665,880	$ 686,523	$ 707,118	$ 727,625	$ 747,998	$ 768,194	$ 788,935	$ 809,448
Victor Valley UZA	$ 104,086	$ 107,625	$ 111,284	$ 114,957	$ 118,635	$ 122,313	$ 125,982	$ 129,636	$ 133,266	$ 136,864	$ 140,559	$ 144,214

FTA Section 5317 New Freedom for San Bernardino Valley

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate				
San Bernardino Apportionment	$ 829,684	$ 850,426	$ 870,836	$ 891,736	$ 912,246	$ 2,782,130	$ 6,153,932	$ 8,197,128	$ 17,538,191
% Change Year to Year Prediction	2.5%	2.5%	2.4%	2.4%	2.3%				

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate				
Apportionment	$ 147,819	$ 151,515	$ 155,151	$ 158,875	$ 162,529	$ 494,630	$ 1,096,405	$ 1,460,427	$ 3,123,262
% Change Year to Year Prediction	2.5%	2.5%	2.4%	2.4%	2.3%				

Total San Bernardino County Total 5317 New Freedom Funds

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate				
San Bernardino Valley	$ 829,684	$ 850,426	$ 870,836	$ 891,736	$ 912,246	$ 2,782,130	$ 6,153,932	$ 8,197,128	$ 17,538,191
Victor Valley UZA	$ 147,819	$ 151,515	$ 155,151	$ 158,875	$ 162,529	$ 494,630	$ 1,096,405	$ 1,460,427	$ 3,123,262

FTA Section 5316 JARC Funds for San Bernardino Valley

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment												
San Bernardino	$ 494,786	$ 950,175	$ 996,000	$ 1,035,000	$ 1,076,000	$ 1,119,000	$ 1,163,000	$ 1,209,000	$ 1,257,360	$ 1,307,654	$ 1,359,961	$ 1,412,999
% Change Year to Year Prediction		92.0%	4.8%	3.9%	4.0%	4.0%	3.9%	4.0%	4.0%	4.0%	4.0%	3.9%

Section 5316 JARCFunds for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$130,784	$149,348	$155,000	$162,000	$168,000	$175,000	$182,000	$189,000	$ 196,560	$ 204,422	$ 212,599	$ 220,891
% Change Year to Year Prediction		14.2%	3.8%	4.5%	3.7%	4.2%	4.0%	3.8%	4.0%	4.0%	4.0%	3.9%

Total San Bernardino County Total 5316 JARC Funds

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate				
San Bernardino Valley	$ 494,786	$ 950,175	$ 996,000	$ 1,035,000	$ 1,076,000	$ 1,119,000	$ 1,163,000	$ 1,209,000	$ 1,257,360	$ 1,307,654	$ 1,359,961	$ 1,412,999
Victor Valley UZA	$ 130,784	$ 149,348	$ 155,000	$ 162,000	$ 168,000	$ 175,000	$ 182,000	$ 189,000	$ 196,560	$ 204,422	$ 212,599	$ 220,891

FTA Section 5316 JARC Funds for San Bernardino Valley

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Apportionment	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
San Bernardino	$ 1,465,280	$ 1,518,030	$ 1,571,161	$ 1,623,009	$ 1,674,946	$ 1,726,869	$ 1,778,675	$ 1,830,257	$ 1,883,334	$ 1,936,068	$ 1,988,341	$ 2,040,038
% Change Year to Year Prediction	3.7%	3.6%	3.5%	3.3%	3.2%	3.1%	3.0%	2.9%	2.9%	2.8%	2.7%	2.6%

Section 5316 JARCFunds for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$ 229,064	$ 237,310	$ 245,616	$ 253,721	$ 261,840	$ 269,957	$ 278,056	$ 286,120	$ 294,417	$ 302,661	$ 310,833	$ 318,914
% Change Year to Year Prediction	3.7%	3.6%	3.5%	3.3%	3.2%	3.1%	3.0%	2.9%	2.9%	2.8%	2.7%	2.6%

Total San Bernardino County Total 5316 JARC Funds

Federal Fiscal Year	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
San Bernardino Valley	$ 1,465,280	$ 1,518,030	$ 1,571,161	$ 1,623,009	$ 1,674,946	$ 1,726,869	$ 1,778,675	$ 1,830,257	$ 1,883,334	$ 1,936,068	$ 1,988,341	$ 2,040,038
Victor Valley UZA	$ 229,064	$ 237,310	$ 245,616	$ 253,721	$ 261,840	$ 269,957	$ 278,056	$ 286,120	$ 294,417	$ 302,661	$ 310,833	$ 318,914

FTA Section 5316 JARC Funds for San Bernardino Valley

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
Apportionment	Estimate	Estimate	Estimate	Estimate	Estimate				
San Bernardino	$ 2,093,079	$ 2,145,406	$ 2,196,896	$ 2,249,621	$ 2,301,363	$ 6,859,360	$ 15,438,585	$ 20,664,404	$ 43,958,348
% Change Year to Year Prediction	2.6%	2.5%	2.4%	2.4%	2.3%				

Section 5316 JARCFunds for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate				
Apportionment	$ 327,206	$ 335,386	$ 343,435	$ 351,678	$ 359,766	$ 1,072,560	$ 2,413,476	$ 3,230,415	$ 6,871,451
% Change Year to Year Prediction	2.6%	2.5%	2.4%	2.4%	2.3%				

Total San Bernardino County Total 5316 JARC Funds

Federal Fiscal Year	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2031	2032	2033	2034	2035				
San Bernardino Valley	$ 2,093,079	$ 2,145,406	$ 2,196,896	$ 2,249,621	$ 2,301,363	$ 6,859,360	$ 15,438,585	$ 20,664,404	$ 43,958,348
Victor Valley UZA	$ 327,206	$ 335,386	$ 343,435	$ 351,678	$ 359,766	$ 1,072,560	$ 2,413,476	$ 3,230,415	$ 6,871,451

FTA Section 5311 Rural Area
Revenues

Fiscal Year	Forecast -- 2009 to 2015											
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Apportionment	$ 917,758	$ 952,348	$ 1,030,659	$ 1,089,800	$ 1,133,300	$ 1,178,700	$ 1,225,800	$ 1,274,900	$ 1,325,900	$1,369,655	$1,413,484	$1,457,302
% Change Year to Year Prediction		3.8%	8.2%	5.7%	4.0%	4.0%	4.0%	4.0%	4.0%	3.3%	3.2%	3.1%

FTA Section 5311 Rural Area
Revenues

Fiscal Year	Forecast -- 2016 to 2025											
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Apportionment	$1,501,021	$1,544,550	$1,587,798	$1,632,256	$1,676,327	$1,719,911	$1,762,909	$1,806,982	$1,850,350	$1,894,758	$1,938,337	$1,982,919
% Change Year to Year Prediction	3.0%	2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%

FTA Section 5311 Rural Area
Revenues

Fiscal Year	Forecast -- 2026 to 2035						Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2030	2031	2032	2033	2034	2035				
Apportionment	$2,026,543	$2,071,127	$2,114,621	$2,159,028	$2,202,209	$2,246,253	$ 7,508,255	$ 16,102,540	$ 20,486,145	$ 45,186,739
% Change Year to Year Prediction	2.2%	2.2%	2.1%	2.1%	2.0%	2.0%				

FTA Section 5307 Urban Formual Funds for the San Bernardino Valley

Fiscal Year Ending			Forecast -- 2009 to 2015										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
San Bernardino Fixed Guideway Apportionment	$4,318,876	$ 4,426,848	$4,864,285	$4,700,000	$5,200,000	$5,350,000	$5,500,000	$5,600,000	$5,800,000	$5,962,400	$6,123,385	$6,282,593	$6,445,940
% Change Year to Year Prediction		2.5%	9.9%	-3.4%	10.6%	2.9%	2.8%	1.8%	3.6%	2.8%	2.7%	2.6%	2.6%
San Bernardino Bus Formula Apportionment	$13,191,281	$ 12,485,060	$14,966,432	$14,600,000	$15,100,000	$15,700,000	$16,200,000	$16,800,000	$17,400,000	$17,974,200	$18,549,374	$19,124,405	$19,698,137
% Change Year to Year Prediction		-5.4%	19.9%	-2.4%	3.4%	4.0%	3.2%	3.7%	3.6%	3.3%	3.2%	3.1%	3.0%

FTA Section 5307 Urban Formual Funds for the Hesperia/Apple Valley/Victorville UZA

Fiscal Year Ending			Forecast -- 2009 to 2015										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Apportionment	NA	NA	$2,303,151	$2,423,700	$2,544,000	$2,638,000	$2,733,000	$2,869,000	$2,967,000	$3,064,911	$3,162,988	$3,261,041	$3,358,872
% Change Year to Year Prediction				5.2%	5.0%	3.7%	3.6%	5.0%	3.4%	3.3%	3.2%	3.1%	3.0%

FTA Section 5307 Urban Formual Funds for the San Bernardino Valley

Fiscal Year Ending	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
San Bernardino Fixed Guideway Apportionment	$6,607,089	$6,765,659	$6,921,269	$7,080,458	$7,243,309	$7,402,662	$7,565,520	$7,724,396	$7,886,608	$8,044,340	$8,205,227	$8,369,332
% Change Year to Year Prediction	2.5%	2.4%	2.3%	2.3%	2.3%	2.2%	2.2%	2.1%	2.1%	2.0%	2.0%	2.0%
San Bernardino Bus Formula Apportionment	$20,269,383	$20,836,926	$21,420,360	$21,998,710	$22,570,676	$23,134,943	$23,713,316	$24,282,436	$24,865,214	$25,437,114	$26,022,168	$26,594,656
% Change Year to Year Prediction	2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%

FTA Section 5307 Urban Formual Funds for the Hesperia/Apple Valley/Victorville UZA

Fiscal Year Ending	Forecast -- 2016 to 2025							Forecast -- 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Apportionment	$3,456,279	$3,553,055	$3,652,541	$3,751,159	$3,848,689	$3,944,907	$4,043,529	$4,140,574	$4,239,948	$4,337,467	$4,437,228	$4,534,847
% Change Year to Year Prediction	2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%

FTA Section 5307 Urban Formual Funds for the San Bernardino Valley

Fiscal Year Ending	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 2010-2035
	2031	2032	2033	2034	2035				
						$ -	$ -	$ -	$ -
San Bernardino Fixed Guideway Apportionment	$8,528,349	$8,690,388	$8,846,815	$9,006,057	$9,168,166	$33,412,400	$68,437,883	$84,469,679	$191,019,962
% Change Year to Year Prediction	1.9%	1.9%	1.8%	1.8%	1.8%				
San Bernardino Bus Formula Apportionment	$27,179,738	$27,750,513	$28,333,273	$28,899,939	$29,477,938	$99,174,200	$211,316,230	$268,842,990	$593,933,420
% Change Year to Year Prediction	2.2%	2.1%	2.1%	2.0%	2.0%				

FTA Section 5307 Urban Formual Funds for the Hesperia/Apple Valley/Victorville UZA

Fiscal Year Ending	2026 to 2035					Total 2010-2015	Total 2016-2025	Total 2026-2035	Total 2010-2035
	2031	2032	2033	2034	2035				
Apportionment	$4,634,614	$4,731,941	$4,831,312	$4,927,938	$5,026,497	$16,815,911	$36,033,061	$45,842,365	$101,115,037
% Change Year to Year Prediction	2.2%	2.1%	2.1%	2.0%	2.0%				

San Bernardino Valley Section
5309 Rail Mod

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment		$ 4,233,781	$ 4,056,000	$ 4,056,000	$ 4,218,000	$ 4,386,000	$ 4,474,000	$ 4,586,000	$ 4,709,822	$ 4,846,407	$ 4,996,645	$ 5,146,545
% Change Year to Year Prediction			-4.2%	0.0%	4.0%	4.0%	2.0%	2.5%	2.7%	2.9%	3.1%	3.0%

Forecast -- 2016 to 2025							Forecast -- 2026 to 2035							
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
$ 5,295,795	$ 5,444,077	$ 5,596,511	$ 5,747,617	$ 5,897,055	$ 6,044,481	$ 6,195,593	$ 6,344,287	$ 6,496,550	$ 6,645,971	$ 6,798,828	$ 6,948,403	$ 7,101,267	$ 7,250,394	$ 7,402,652
2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%	2.2%	2.1%	2.1%

2034 Estimate	2035 Estimate	Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
$ 7,550,705	$ 7,701,720	$ 26,429,822	$ 55,210,726	$ 70,240,779	$160,171,107
2.0%	2.0%				

Local Transportation Fund

Fiscal Year Ending			Forecast -- 2009 to 2015									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
			Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Predicted Population	1,819,168	1,844,474	1,869,780	1,895,087	1,920,393	1,945,700	1,971,006	1,996,312	2,021,619	2,046,925	2,072,231	2,097,538
Predicted BOE Receipts	$ 64,516,530	$ 67,788,016	$ 77,063,868	$ 66,048,303	$ 61,199,485	$ 62,423,475	$ 64,920,414	$ 67,517,230	$ 70,217,919	$ 72,535,110	$ 74,856,234	$ 77,176,777
% Change Year to Year Receipts Prediction		5.1%	13.7%	-14.3%	-7.3%	2.0%	4.0%	4.0%	4.0%	3.3%	3.2%	3.1%

Local Transportation Fund

Fiscal Year Ending	Forecast -- 2016 to 2025											
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Predicted Population	2,122,844	2,148,151	2,173,457	2,198,763	2,224,070	2,249,376	2,274,683	2,299,989	2,325,295	2,350,602	2,375,908	2,401,214
Predicted BOE Receipts	**$ 79,492,080**	**$ 81,797,351**	**$ 84,087,677**	**$ 86,442,132**	**$ 88,776,069**	**$ 91,084,247**	**$ 93,361,353**	**$ 95,695,387**	**$ 97,992,076**	**$ 100,343,886**	**$ 102,651,795**	**$ 105,012,787**
% Change Year to Year Receipts Prediction	3.0%	2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%

Local Transportation Fund

Fiscal Year Ending	Forecast -- 2026 to 2035						Total 2010-2015	Total 2016-2025	Total 2026-2035	Total FY 2010-2035
	2030	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate				
Predicted Population	2,426,521	2,451,827	2,477,134	2,502,440	2,527,746	2,553,053				
Predicted BOE Receipts	**$ 107,323,068**	**$ 109,684,175**	**$ 111,987,543**	**$ 114,339,282**	**$ 116,626,067**	**$ 118,958,589**	**$ 398,813,633**	**$ 852,769,306**	**$ 1,084,919,268**	**$ 2,402,550,510**
% Change Year to Year Receipts Prediction	2.2%	2.2%	2.1%	2.1%	2.0%	2.0%				

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$ 55,245	$ 68,385	$ 71,800	$ 74,600	$ 77,600	$ 80,700	$ 83,900	$ 87,300	$ 90,530	$ 93,789	$ 97,166	$ 100,566
% Change Year to Year Prediction			5.0%	3.9%	4.0%	4.0%	4.0%	4.1%	3.7%	3.6%	3.6%	3.5%

Section 5316 JARCFunds for Victorville/Hesperia/Apple Valley UZA

Federal Fiscal Year	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate				
Apportionment	$130,784	$149,348	$155,000	$162,000	$168,000	$175,000	$182,000	$189,000	$ 196,560	$ 204,422	$ 212,599	$ 220,891
% Change Year to Year Prediction		14.2%	3.8%	4.5%	3.7%	4.2%	4.0%	3.8%	4.0%	4.0%	4.0%	3.9%

FTA Section 5307 Urban Formual Funds for the Hesperia/Apple Valley/Victorville UZA

Fiscal Year Ending	Forecast -- 2009 to 2015											
	2006	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Apportionment	NA	$2,303,151	$2,423,700	$2,544,000	$2,638,000	$2,733,000	$2,869,000	$2,967,000	$3,064,911	$3,162,988	$3,261,041	$3,358,872
% Change Year to Year Prediction			5.2%	5.0%	3.7%	3.6%	5.0%	3.4%	3.3%	3.2%	3.1%	3.0%

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
LTF		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate				
Adelanto		$962,607	$ 834,074	$ 839,325	$ 855,746	$ 889,976	$ 925,575	$ 962,598				
Apple Valley		$2,611,846	$ 2,134,564	$ 2,087,575	$ 2,128,418	$ 2,213,554	$ 2,302,097	$ 2,394,180				
Hesperia		$3,105,569	$ 2,607,619	$ 2,615,574	$ 2,666,747	$ 2,773,417	$ 2,884,353	$ 2,999,727				
Victorville		$3,681,160	$ 3,113,560	$ 3,198,971	$ 3,261,558	$ 3,392,020	$ 3,527,701	$ 3,668,809				
Unincorporated County portion				$ 2,090,166	$ 2,167,397	$ 2,245,450	$ 2,357,188	$ 2,437,705				
Total for Victor Valley		$10,361,182	$ 8,689,817	$ 10,831,611	$ 11,079,866	$ 11,514,417	$ 11,996,914	$ 12,463,019	$12,936,614	$13,402,332	$13,858,012	$14,301,468
% Change Year to Year Prediction					2.3%	3.9%	4.2%	3.9%	3.8%	3.6%	3.4%	3.2%

FTA Section 5311

Fiscal Year		Actual	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate				
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Victor Valley Trant Authority		$ 218,262	$ 215,780	$ 242,160	$ 251,861	$ 261,925	$ 272,417	$ 283,314	$294,080	$304,667	$315,025	$325,106
% Change Year to Year Prediction			-1.1%	12.2%	4.0%	4.0%	4.0%	4.0%	3.8%	3.6%	3.4%	3.2%

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley U

Federal Fiscal Year	Forecast – 2016 to 2025							Forecast – 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Apportionment	$ 104,086	$ 107,625	$ 111,284	$ 114,957	$ 118,635	$ 122,313	$ 125,982	$ 129,636	$ 133,266	$ 136,864	$ 140,559	$ 144,214
% Change Year to Year Prediction	3.5%	3.4%	3.4%	3.3%	3.2%	3.1%	3.0%	2.9%	2.8%	2.7%	2.7%	2.6%

Section 5316 JARCFunds for Victo Valley UZA

Federal Fiscal Year	Forecast – 2016 to 2025							Forecast – 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Apportionment	$ 229,064	$ 237,310	$ 245,616	$ 253,721	$ 261,840	$ 269,957	$ 278,056	$ 286,120	$ 294,417	$ 302,661	$ 310,833	$ 318,914
% Change Year to Year Prediction	3.7%	3.6%	3.5%	3.3%	3.2%	3.1%	3.0%	2.9%	2.9%	2.8%	2.7%	2.6%

FTA Section 5307 Urban Formual Hesperia/Apple Valley/Victorville U

Fiscal Year Ending	Forecast – 2016 to 2025							Forecast – 2				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Apportionment	$3,456,279	$3,553,055	$3,652,541	$3,751,159	$3,848,689	$3,944,907	$4,043,529	$4,140,574	$4,239,948	$4,337,467	$4,437,228	$4,534,847
% Change Year to Year Prediction	2.9%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LTF												
Adelanto												
Apple Valley												
Hesperia												
Victorville												
Unincorporated County portion												
Total for Victor Valley	$14,730,512	$15,142,966	$15,566,969	$15,987,278	$16,402,947	$16,813,020	$17,233,346	$17,646,946	$18,070,473	$18,486,094	$18,911,274	$19,327,322
% Change Year to Year Prediction	3.0%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%

FTA Section 5311

Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Victor Valley Trant Authority	$334,859	$344,236	$353,874	$363,429	$372,878	$382,200	$391,755	$401,157	$410,785	$420,233	$429,898	$439,356
% Change Year to Year Prediction	3.0%	2.8%	2.8%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.3%	2.2%

Section 5317 New Freedom for Victorville/Hesperia/Apple Valley l

Federal Fiscal Year	2026 to 2035					Total 2009-2015	Total 2016-2025	Total 2026-2035	Total FY 2009-2035
	2031	2032	2033	2034	2035				
	Estimate	Estimate	Estimate	Estimate	Estimate				
Apportionment	$ 147,819	$ 151,515	$ 155,151	$ 158,875	$ 162,529	$ 566,430	$ 1,096,405	$ 1,460,427	$ 3,123,262
% Change Year to Year Prediction	2.5%	2.5%	2.4%	2.4%	2.3%				

Section 5316 JARCFunds for Victc Valley UZA

Federal Fiscal Year	2026 to 2035					Total 2009-2015	Total 2016-2025	Total 2026-2035	Total FY 2009-2035
	2031	2032	2033	2034	2035				
Apportionment	$ 327,206	$ 335,386	$ 343,435	$ 351,678	$ 359,766	$ 1,227,560	$ 2,413,476	$ 3,230,415	$ 6,871,451
% Change Year to Year Prediction	2.6%	2.5%	2.4%	2.4%	2.3%				

FTA Section 5307 Urban Formual Hesperia/Apple Valley/Victorville l

Fiscal Year Ending	2026 to 2035					Total 2009-2015	Total 2016-2025	Total 2026-2035	Total FY 2009-2035
	2031	2032	2033	2034	2035				
Apportionment	$4,634,614	$4,731,941	$4,831,312	$4,927,938	$5,026,497	$ 19,239,611	$ 36,033,061	$ 45,842,365	$ 101,115,037
% Change Year to Year Prediction	2.2%	2.1%	2.1%	2.0%	2.0%				

	2031	2032	2033	2034	2035	Total 2009-2015	Total 2016-2025	Total 2026-2035	Total FY 2009-2035
LTF									
Adelanto									
Apple Valley									
Hesperia									
Victorville									
Unincorporated County portion									
Total for Victor Valley	$19,752,523	$20,167,326	$20,590,840	$21,002,657	$21,422,710	$ 79,512,258	$153,438,850	$ 195,378,164	$ 428,329,272
% Change Year to Year Prediction	2.2%	2.1%	2.1%	2.0%	2.0%				

FTA Section 5311

Fiscal Year						Total 2009-2015	Total 2016-2025	Total 2026-2035	Total FY 2009-2035
	2031	2032	2033	2034	2035				
Victor Valley Trant Authority	$449,022	$458,451	$468,079	$477,440	$486,989	$ 1,821,537	$ 3,488,029	$ 4,441,409	$ 9,750,975
% Change Year to Year Prediction	2.2%	2.1%	2.1%	2.0%	2.0%				

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